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Henry C. Pearson, F. R. G. S., Founder

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Current Curing Practice[1]

Curing Economy and Physical Quality Improved by Accelerators
Cures Are Set Experimentally and Confirmed in Production
Low Temperatures and Equivalent Cures
Current Factory Cures

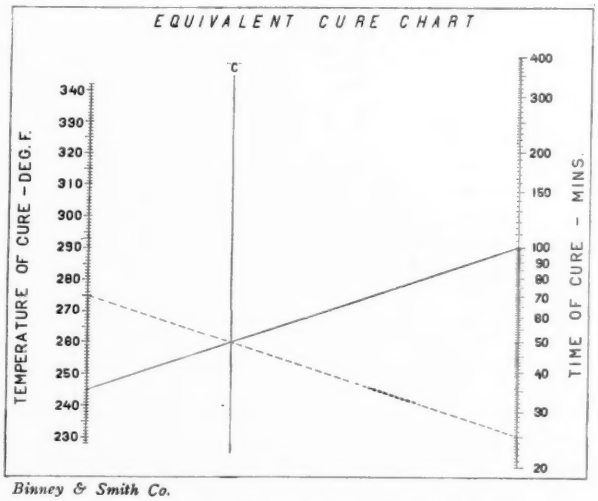
WEBSTER NORRIS

THE developments in rubber technology, particularly the introduction of organic accelerators, have radically influenced the vulcanization of rubber goods, especially as to curing times and temperatures of heat cured articles. The resulting advantages are expressed in vast savings in factory operation and the large increase of output over that obtained from the same equipment operated under the earlier methods. This is a notable economic gain.

It is convenient to make a distinction between vulcanization and cure because output of serviceable goods at competitive prices depends more upon experience with technical methods than on theoretical considerations. This distinction may be outlined thus: Vulcanization, or the combination of rubber and sulphur, is promoted by the influence of heat, which changes the chemical and physical properties of raw rubber and converts it into a product with greater tensile strength, stretch, and resiliency. It also has more resistance to organic solvents, to chemical action, and changes of temperature.

The degree of vulcanization is determined by the "coefficient of vulcanization," which is the percentage ratio of sulphur combined with the rubber. The properties of vulcanization are evident at a sulphur coefficient of 2 to 2.5 per cent, this ratio producing soft vulcanized rubber. In hard rubber or vulcanite the percentage of combined sulphur may be as high as 32 per cent. The rapidity with which vulcanization takes place is proportional to the heat applied and length of time of its duration.

The factory term "cure" indicates that degree of vulcanization judged by experience as conferring on the product the best physical state for the service desired of the goods.



Binney & Smith Co.

Nomograph for Determining Equivalent Cures

Factory Curing Practice

The methods and means used for curing rubber goods have been evolved by experience according to the type, construction, and finish of the product and the purpose it is intended to fill. These points receive consideration in the specifications for the goods. The rubber mixing formula is worked out experimentally in the laboratory with regard to proper balance of the ingredients that will result in the physical properties desired.

These preliminaries having been settled, the following points are considered in setting factory cures for the goods: (1) the range of the curing temperature, (2) the firmness of cure desired, and (3) freedom from blooming. Laboratory experimental results on these points are confirmed or modified by actual factory tests by which the working cures are

finally set. These cures are varied as conditions seem to require, changing either or both time and temperature.

The cures listed in the accompanying tables typify the best actual current American rubber manufacturing practice in different leading factories. The curing methods employed now do not in all instances coincide with those employed for corresponding articles before the introduction of organic accelerators. This applies, for example, to sheet packings, which are no longer press cured, also to inner tubes, now largely molded.

The cures recorded in Table 1 apply to a considerable list of common articles, mostly mechanical rubber goods cured in hydraulic presses, molds, or open steam. In mold and press curing it is customary to bring the temperature of press platens and molds up to the curing temperature before the introduction of the goods to be cured, also to reckon the interval between closing and opening of the press or mold as the curing time.

TABLE 1

TYPICAL CURRENT CURING PRACTICE

Articles	Method of Curing	Cures: Time Min.	Cures: Heat ° F.
Balls, dolls, and toys	Mold	20	307
Bathing caps	Mold	10	293
Belting (6" 4 ply)	Press	22	280
Brake lining	Press	30	300
Cements for belt splicing	Press	30	280
Cements for tube splicing	Press	5	280
Dental vulcanite	Mold	30	302
Dipped goods	Acid	5 to 10 sec.	Room temp.
Dipped goods	Water	20	280
Erasers	Press	15	293
Heels	Mold	15	320
Hose (wrapped on poles)			
Airbrake	Steam	25	275
Garden	Steam	30	275
Steam	Steam	30	275
Suction[1] (large)	Steam	40	288
Water, etc.	Steam	30	275
Hose, garden, (braided)[2]	Steam	20	300
Inner tubes, molded	Press	5	300
Jar rings	Steam	20	274
Matting, roll	Press	10-12	287
Molded articles, small	Press	15	320
Rubberized fabrics	Steam	105	260
Rubberized fabrics	Dry heat	60	270
Soles	Mold	24	308
Stamp gum	Press	10	275
Water bottles	Mold	7½	327
Wire, insulated	Steam	35	275
Wire, code	Hot air	90	240
Valves, ¼-inch			
Hard	Mold	90	327
Medium	Mold	25	293
Soft	Mold	35	293

[1] Varies with thickness of wall of hose.
[2] Lead encased, 130 pounds' water pressure internally.

It is common practice to pipe standard steam pressure throughout a press room and as far as feasible to cure the general run of molded articles at the heat thus provided. In Table 1 this is given as 15 minutes at 320° F. for small molded articles. With some molded specialties the cure is reduced to 5-minute heats. In any event competition demands securing the maximum output of heats obtainable from the mold equipment at hand.

Cloth-wrapped hose and tires molded in a steam press vulcanizer are heated a certain time depending upon the mass of goods and metal to be raised to the vulcanizing temperature before counting the curing interval. Otherwise the goods would fail of proper cure.

In the case of rubber lined cotton fire hose the rubber lining is semicured in open steam heat preliminary to being cemented and drawn into the cotton cover. When the lining is within the cover, it is inflated by steam pressure maintained for a time to complete the cure of the tube and its attachment to the lining.

Stepped Cures

For a similar reason some scheme of advancing the temperature by intervals in the so-called stepped cures has always been practiced. A number of stepped heats are recorded in Table 2. These apply to various types of goods and modes of curing. The cures indicated are representative. They are varied according to existing conditions of compound, construction of goods, masses of metal to be heated, accelerators used, etc.

TABLE 2

STEPPED CURES FOR RUBBER AND FABRIC CONSTRUCTIONS

Articles	Method	Stepped Cures: First Time Min.	First Heat ° F.	Final Time Min.	Final Heat ° F.
Footwear	Dry heat	60	260	90	260
Inner tubes	Steam	3	300	16	300
Paper press rolls	Steam	60-100	270	300-600	270
Proofed fabrics	Dry heat	120	255	120	255
Pneumatic tires[1]	Press vulc.	15	300	40	300
Red sheet packing	Water	25	260	25	260
Rubber lined cotton fire hose	Steam	15	280	25	275
Solid tires[2]	Press vulc.	15	286	255	286
Thread	Water	15	287	140	287

[1] Balloon 4 ply 4.75.
[2] Ten inch.

For example, a stepped footwear cure, considerably different from the one listed in the table, is cited below. It is used by a manufacturer of tennis shoes in which the rubber mixing is well accelerated. The cure proceeds as follows: After the vulcanizing chamber containing the goods is at 100° F. the heat is raised by these successive steps: 60 minutes from 100° to 230°; 15 minutes from 230 to 240°; 15 minutes from 240 to 250°; then held for 30 minutes at 250° to complete the cure.

Packing Cures

Roll sheet steam packings were formerly semicured on drums in open heat and then given a brief cure between hydraulic press plates to give a smooth surface. Such packings are today rolled, wrapped, and cured on drums either in open steam or hot water as indicated in Table 3.

TABLE 3

SHEET PACKINGS ROLLED ON DRUMS AND WRAPPED

Kind of Packing	Method	Cure: Time Min.	Cure: Heat ° F.
Red sheet	Steam	50	280
Red sheet	Water	37	287
Cloth insertion			
Thicknesses on drum, 1 inch or less	Steam	First 60	240
		Second 30	250
		Final 45	240
2 inches or less on drum	Steam	First 75	240
		Second 30	250
		Final 45	240

Cloth insertion or so-called C. I. packing is cured on various schedules of time and steam as indicated in Table 3, according to the thickness of the layer of packing wound on the curing drum.

Low Temperature Cures

Cures made at pressures from 10 to 30 pounds of steam per square inch equivalent to 239° to 274° F. are rated as low temperature cures. They can be effected by various accelerators of low critical temperatures and are employed under suitable conditions of compounding and handling. Low temperature cures produce maximum service quality when both temperature and time are reduced. Such cures depend on the use of very active accelerators, certain of which may cause scorching of the rubber compound at the heat of mixing, calendering, or tubing. This tendency, when present, may be obviated by combining the use of two accelerators of different critical temperatures.

High power accelerators not only increase output by reducing curing time but improve the tensile properties of the product as well. The slowness with which heat enters the rubber makes it unpracticable to shorten materially the cure of heavy masses. For even though highly accelerated, the center of the goods will be undercured. It should be remarked in this connection that goods cured in dry heat require a very fast accelerator because of the low temperatures

TABLE 4
EQUIVALENT TIME AND TEMPERATURE FOR VULCANIZATION

Temp. ° F.	260	265	270	275	280	285	290	295	300	305	310	315	320
Time in hours and minutes.	1.0	0.48	0.38	0.30	0.24	0.19	0.15	0.12	0.9.5	0.7.5	0.6	0.4.8	0.3.8
	1.10	0.55	0.44	0.35	0.28	0.22	0.17.5	0.14	0.11	0.8.8	0.7	0.5.5	0.4.4
	1.20	0.63.5	0.50.5	0.40	0.31.8	0.25	0.20	0.16	0.12.7	0.10	0.8	0.6.3	0.5
	1.30	1.12	0.57	0.45	0.36	0.28.5	0.22.5	0.18	0.14	0.11.5	0.9	0.7.2	0.5.7
	1.40	1.19	1.3	0.50	0.40	0.31.6	0.25	0.20	0.15.8	0.12.5	0.10	0.8	0.6.3
	1.50	1.27	1.9	0.55	0.44	0.35	0.27.5	0.22	0 17.4	0.13.8	0.11	0.8.7	0.6.9
	2.0	1.36	1.16	1.0	0.48	0.38	0.30	0.24	0.19	0.15	0.12	0.9.6	0.7.6
	2.10	1.43	1.22	1.5	0.52	0.41	0.32.5	0.26	0.20.6	0.16.4	0.13	0.10.3	0.8.2
	2.20	1.51	1.28	1.10	0.56	0.44	0.35	0.28	0.22	0.17.6	0.14	0.11	0.9
	2.30	2.0	1.35	1.15	1.0	0.48	0.38	0.30	0.24	0.19	0.15	0.12	0.9.5
	2.40	2.7	1.41	1.20	1.4	0.50.6	0 40	0.32	6.25.4	0.20	0.16	0.12.7	0.10
	2.50	2.15	1.47	1.25	1.8	0.54	0.42.5	0.34	0.27	0.21.4	0.17	0.13.5	0.10.7
	3.0	2.24	1.54	1.30	1.12	0.57	0.45	0.36	0.28.5	0.22 5	0.18	0.14.4	0.11.4
	3.10	2.31	2.0	1.35	1.16	1.0	0.47.5	0.38	0.30	0.24	0.19	0.15	0.12
	3.20	2.39	2.6	1.40	1.20	1.3	0.50	0.40	0.31.7	0.25	0.20	0.15.9	0.12.6
	3.30	2.48	2.13	1.45	1.24	1.6	0.52	0.42	0.33	0.26	0.21	0.16.8	0.13.3
	3.40	2.55	2.19	1.50	1.28	1.9.5	0.55	0.44	0.35	0.27.7	0.22	0.17.5	0.14
	3.50	3.3	2.25	1.55	1.31	1.12.7	0.57.7	0.46	0.36.5	0.29	0.23	0.18.3	0.14.5
	4.0	3.12	2.32	2.0	1.36	1.16	1.0	0.48	0.38	0.30	0.24	0.19	0.15

From the *R. T. Vanderbilt Co. Notebook.*

As an example of the use of the table, if a certain article is being vulcanized for 40 minutes at 30½ pounds or 275° F., and it is desired to reduce the time to 20 minutes, then by reference to the table the pressure must be increased to 43 pounds or the temperature to 290°.

India Rubber Journal, Apr. 10, 1920.

used and the slow penetration of the heat into the goods.

The tendency to adopt low temperature cures is particularly marked in the production of tires, inner tubes, and light-weight molded specialties where the value of the product depends more on the number of heats per day than on the weight of the stock.

Equivalent Cures

Occasions for using equivalent cures occur frequently in factory practice more especially when it is desired to hasten the cure without first resorting to recompounding. Stocks that have proved satisfactory in service should not be changed if it can be avoided. Equivalent cures accelerate by the use of increased temperature and are applicable both to unaccelerated and accelerated stocks. They were established in curing practice long before the introduction of organic accelerators. They are based on the well established fact that a rise of 15° F. will double the rate of vulcanization or in other words will reduce the curing time by a half. This approximation holds practically for cures of both accelerated and unaccelerated stocks.

This fact was confirmed by J. R. Sheppard[2], whose results are summarized as follows: "A determination of the temperature coefficient of vulcanization on a typical litharge stock in press cures ranging from 242° to 332° F. yielded 13° F. as the temperature interval responsible for doubling the curing intensity. Breaking tensile, elongation, tensiles at several fixed elongations, tensile products, energy, and combined sulphur, when used separately as criteria, yield coefficients ranging from 12.6° to 13.7° F. These values agree within the limits of experimental error, with the average for all criteria of 13° F.

"It follows that the character of the vulcanizate remains approximately the same, as the temperature and time are jointly changed in such a way as to keep the total curing effect constant."

Table 4 is based on the fact that the curing rate is doubled by raising the temperature 15° F. This table serves satisfactorily for converting cures at one temperature to equivalent cures at another temperature. To obtain the equivalent factory cure, time must be added in order that the heat may penetrate the goods.

Equivalent Cure Chart

A nomograph[3] is included in this article. It is based on the same assumption as Table 4: namely, that the rate of cure of a rubber compound doubles with every 15° F. rise in the curing temperature. It gives in graphic form the same information as Table 4, thus eliminating the necessity of interpolation for the solution of many actual curing problems.

The chart found on the leading page of this article comprises three vertical lines and is used as follows: The graduations at the left read temperature of cure from 230° to 340° F. Those at the right read time of cure by minutes from 20 to 400. The line "C" is ungraduated. Across the chart are drawn a full and a dotted line. These illustrate the manner of using the device for finding an equivalent cure in the following problem.

Given a cure of 100 minutes at 245° F., what time will be required for an equivalent cure at 275° F.? The solution is found as follows: Draw across the chart the full line connecting the 100-minute graduation with the 245° F. graduation. It will interest the line "C." Connect this intersection by a dotted line with the proposed temperature, 275° F., and project it to cut the time scale at the right where it reads 25 minutes, the line of the required equivalent cure.

For cures shorter than 20 minutes, one-tenth of the time scale may be used.

Absolute accuracy is not claimed for the chart since the assumption on which it is based does not hold rigidly for all compounds, but it does give close approximation for temperature changes over almost the entire scale given.

Vultex-Vulcanized Latex

Vultex is vulcanized rubber latex prepared under the Schidrowitz patents and is one of the most important developments of a singularly interesting raw material. The processes employed in the preparation of Vultex have prepared the way for the use of latex in many industries in which previously rubber had no place. For example, manufacturers of plush and pile fabrics for use in automobile upholstery have discovered an important and growing use for this material as a backing for their goods.

Another important development now in the experimental stage is the use of Vultex in manufacturing inner tubes for automobile tires. In all road tests these tubes have shown great strength and wearing quality. Other new applications are in process of development, which will not only improve present products but create new articles of commerce.

MATERIAL FOR MAKING DRIVING BELTS, COVERINGS FOR paper mills rolls, etc., is made by vulcanizing the polymerization products of butadiene mixed with lampblack and other fillers. The polymerization products of butadiene which do not distill without decomposition are used for making plates or elastic sheets, impregnated cloth, etc. Diolefins, particularly butadiene and its homologs, are obtained in good yield directly from alcohols having in their molecules fewer carbon atoms than that of the diolefin obtained in the presence of a catalyst. Ethyl alcohol gives butadiene freely when in the presence of zinc and aluminum oxides.

[2] "Temperature Coefficient of Vulcanization on a Litharge Compound." Read before the Division of Rubber Chemistry, A. C. S., St. Louis, Mo., Apr. 18, 1928. INDIA RUBBER WORLD, May 1, 1929, pp. 56-60.

[3] By H. A. Braendle, Binney & Smith Co., New York, N. Y.

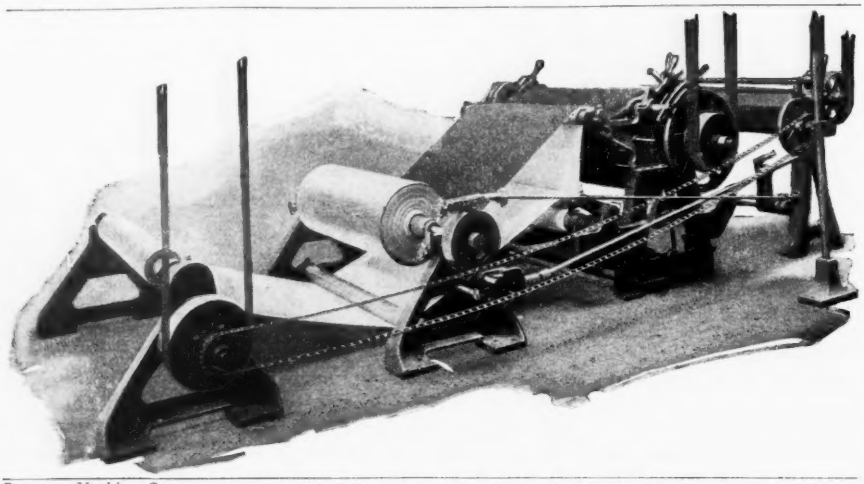
FRICTION TAPE MAKING

—*Unique, Progressive Industry*

Recent Advances in Manufacturing -- Better Grades in Stronger Demand — One Rubber Product Better Unvulcanized — Tape Tests Are Exacting

TO THE average user the tape called friction is to him a sticky strip and nothing more. To experts in the electric and allied industries the narrow, rubberized fabric band is indispensable in binding, splicing, and insulating operations, and none better realize how dependent are safety and efficiency on the employment of the best possible product. In fact, it is to the keener appreciation of the more skillful users that manufacturers attribute the markedly improving demand for the better grades of this uniquely useful commodity.

In service the term friction as applied to tape connotes not rubbing but rather its antithesis, the prevention of rubbing, and the checking of motion between surfaces in contact. As it is primarily essential that friction tape must stick and stay stuck to the utmost degree, it is given the required non-slip quality by coating it with a rubberized composition so tenacious as to make it practically immovable when applied, while affording maximum pliability, moisture proofing, and electrical insulation. More definitely, such tape is so termed because in its initial treatment rubber is impressed into the textile through a friction coating rather than through a knife or surface spreading process, although the latter is used in giving the tape its final and actually adhesive coating.



Cameron Machine Co.

High Speed Camachine for Production of Friction Tape

Quality of Fabric Stressed

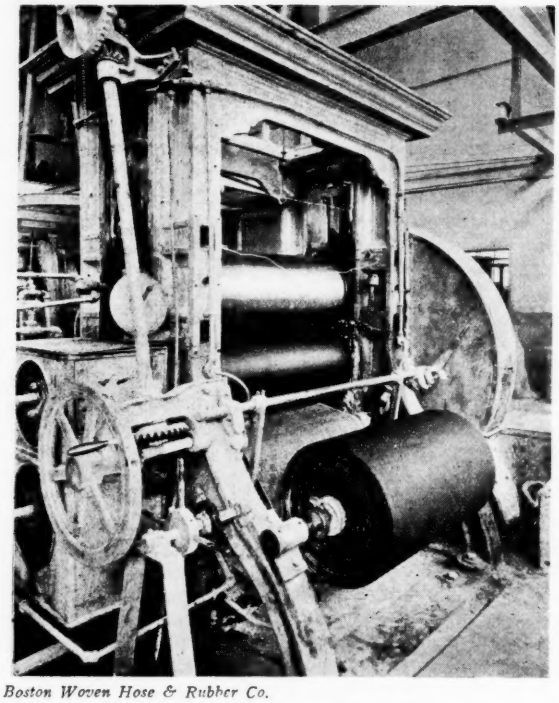
In making the better grades of friction tape the cotton sheeting forming the body of the tape is selected with special care. It must be strong enough to withstand all processing and service strains, must not be easily wrinkled, and have body enough fairly to resist water and electricity, and hold an ample quantity of rubber impregnation and surface coating. The fabric base must be evenly and firmly woven, free from dirt, knots, lumps, and irregularities of twist, and its warp threads must run in such straight lines as to lessen the likelihood of raveling when the treated cloth is being slitted into tape. Widths of sheeting may range from 40 to 50 inches, the breadth depending on the finished width of the final tape and the number of coils to be made. One exacting requirement relates to the number of warp and woof threads per square inch to lessen the chances of pinholes appearing in the final coated product, more than two such imperfections per lineal yard being considered excessive.

Friction tape is always straight cut, unlike the "piping" adhesive tape, which is always bias cut and used in making rubber footwear for joining soles to uppers. Such bias cutting allows a certain stretch and thus permits the tape to be fitted without wrinkling around curves and edges of shoe lasts.

Frictioning and Coating

The cotton sheeting is well dried before given any rubber coating. It is first frictioned with a sulphur-free compound of rubber, usually of good smoked sheet stock, heavily pressed into the fabric in a 3-roll calender with heated rolls. The rubber stock, well broken down, softened, and warmed on heavy mixing mill or in an internal mixer, is fed between the upper calender rolls and forms a layer around the middle roll, between which and the bottom roll the cloth is automatically fed into the machine. The lower roll travels at a slower speed than the one above it. This difference in speed causes a revolving "bank" or roll of rubber to form at the bight of the rolls, which drives the rubber into all the interstices of the fabric. When the roll has been thoroughly friction coated on one side, the sheeting is passed again through the calender and frictioned and filled on the opposite side. As it receives its frictioning, the sheeting is meanwhile being rolled up with an uncoated cotton fabric to keep the plies from sticking together.

Besides being essential for effective waterproofing and insulating, the friction coating gives a surer foundation for the



Boston Woven Hose & Rubber Co.

Calendering Friction Tape Fabric

gum coating next to be applied. The second coating functions to make and keep the tape adhesive. The gum coating cannot effectively be made to do more than this; its usefulness for resistance to moisture and electricity is merely incidental to the calendering process. To attain best results, tape should be frictioned on both sides, for only thus can it satisfactorily hold the surface coating and also be properly strengthened for its many uses.

Adhesive Surface Coating

For the coating applied in the second operation pure rubber is not a requisite even in making the best quality of friction tape. A tacky non-vulcanizing rubber mix serves the many requirements of the tape much better than rubber solely. Pure rubber would be too susceptible to temperature changes, softening under heat, hardening under cold, and not sufficiently adhesive even at moderate temperatures. Friction tape coated with pure rubber would thus be quite useless. The rubber must be mixed with other ingredients to stabilize it toward temperature changes, to impart the utmost practical tenacity, and to give it maximum aging quality, in other words, to keep it soft, sticky, and useful for a reasonable period. The added ingredients are considered not as mere fillers or substitutes but have important reenforcing properties. They are, in fact, as essential as water and yeast mixed with flour in making bread.

The second coating is applied in a spreading machine into which the fabric is first entered over a roller and under a heavy "doctor" blade or dull-edged knife. The fabric is held smooth under a tension, and the black viscid composition is fed upon its moving surface. The mass is thus carried up against the spreading blade and revolves against the cloth. The thickness of the gum coat is regulated by the pressure of the blade on the cloth as the latter passes between blade and roll.

As the frictioned fabric is being drawn through the machine and spooled on the farther side, the protective fabric between the plies is drawn backward and coiled for further use. A succeeding operation is passing the coated fabric over a series of steam pipes to dry the coating to the desired degree, after which the web is wound on itself into a tight roll for cutting.

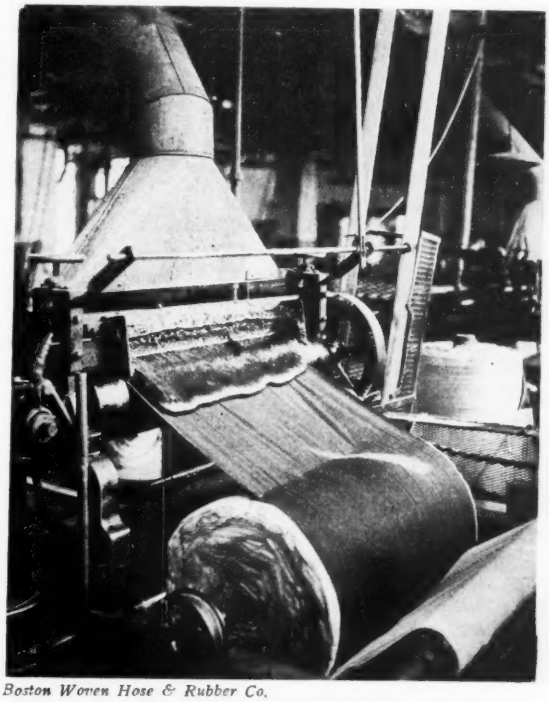
Cutting Narrow Tape Rolls

Formerly the narrow-width rolls such as the trade chiefly requires were made by rewinding sufficient of the broad web of treated fabric on to a paper core to make a roll of small diameter. Such a roll was then mounted on a speed lathe and sliced into sections of suitable width by pressing a knife into the roll as it revolved. The chief fault of this method was that it tended to produce strips with fretted edges by cross cutting the warp threads of the fabric. Even skillful operators found it difficult to prevent the edges of coils sealing themselves together, ply to ply, because the knife in severing the large roll forced at the same time the ply edges together and plastered the compound over the sides of the coil. Next to drying out of coils, the loosening of threads on the edge of tape has been one of the main worries of users and has made the frayless edge products the desideratum of both makers and users.

Non-fraying tape has recently been achieved through the use of an ingenious slitting and roll-winding apparatus known as the Camachine. Its equipment includes a device for cutting paper cores into lengths corresponding to the required widths of tape, all cuts being made in one operation and on the same mandrel on which the tape strips are to be wound. When the machine is being operated, a cutter backing roller revolves and the broad web to be slit is drawn taut across it, while a liner rewinder automatically relieves the mill roll of its protecting fabric. The slitter wheel is spring-pressed against the roller and revolves by friction as the web passes. In so doing it separates the web of fabric by a combined rolling and crushing motion, causing a clean, smooth, accurate cut. Fabric edge fraying is averted by the blades following the longitudinal threads entirely through the length of the web.

Tape Tests Exacting

Good friction tape has a highly viscous surface easily tested by pulling a ply from a roll. At the point of separa-



Boston Woven Hose & Rubber Co.

Spreading Machine Applying Surface Coating on Frictioned Fabric

tion in good tape can be seen long, fibrous, elastic filaments or "teeth" proving the presence of a live, rubbery coating and attesting its high binding and cementing quality. That there may be no deviation from high standards set for the making of tape, the makers are continually applying tests that are as exacting for their purpose as those used for the most pretentious rubber products.

A standard procedure requires that a piece of ¾-inch tape be unwound from a roll and rewound on a 1-inch mandrel under a tension of 10 pounds. It is then unwound from the mandrel, the pull necessary to unwind the tape at the rate of 30 inches per minute indicating the strength of the friction, or the pulling apart resistance. Two friction tests are usually made: the first when the tape is received fresh from the manufacturing department, and the second or aging test after the tape has been heated in an electric oven at 212° F. for 16 hours. While results vary with the compounds and processes employed, a good average result is 4 pounds before heating and 2.7 pounds after heating. In another test the effect of sunlight on tape is determined through the application of intense violet rays, which show in a few minutes the deterioration that sunlight would cause after many hours' exposure.

Another test to which tape is often subjected, although concededly not so precise in its results with unvulcanized as with cured rubber, is the oxygen aging test in which tape is placed into a bomb charged with oxygen under high pressure and kept hot for several hours. This test gives a reasonably good idea of the resistance to drying or oxidation of the rubbery coating of the goods.

Asbestos Wrapping Cloths

Need of a Finely Woven Asbestos Fabric

THE use of asbestos covering for steam pipes, boilers, and vulcanizers is familiar to everyone in the rubber industry. However, little attention has been given to the production of suitable wrapping cloths for rubber goods. Given suitable material, a large field is open for the introduction of fine asbestos cloths. But manufacturers find difficulty in producing the degree of fineness which is essential for many purposes and which can be obtained with cotton. Coarser asbestos cloths suitable for many purposes can easily be produced, but the big demand is for a cloth of very fine texture.

Mechanical rubber goods manufacture has for many years afforded a wide field for asbestos fabrics in packings, and as steam hose and conveyer belt covers for hot materials. While it is difficult to make a closely woven asbestos cloth, it is possible to weave one which is entirely satisfactory. Naturally the weaving is more costly than the open construction cloth.

The problem of manufacturing a strong yet finely woven asbestos fabric suitable for wrapping all kinds of steam cured goods is one which should well repay the closest attention on the part of the asbestos weavers. The life of the usual cotton cloth is notoriously low, and the cost is a factor in reckoning the cost of the finished article. Experiments have been made over a number of years with various cotton-asbestos union cloths, but nothing has been made fine enough for the average class of work. Such fabrics last two to three times as long as the all cotton types, but weakness always appears in the cotton threads. Similar experiments with all asbestos fabrics were even more promising, but here again the cloths were much too coarse; and experiments were abandoned on this account.

Much tension is often applied in steam wrapping in both directions, and consequently a union cloth is not the ideal solution to the problem even if one could be produced sufficiently fine. One really successful development is the use of narrow strips of asbestos-cotton union cloths with the asbestos threads running along the strips. For coarse work these gave exceptional results since no tension was put on to the cotton in the material. The amount which could be thus used, whatever the composition, is very limited, however, and the difficulty of coarseness of all-asbestos fabrics must be overcome if the material is to become generally useful. At the same time a competitive price is necessary although it must be remembered that a higher price would be permissible because of the saving effected in length of life.

Quarter and Vamp Linings[1]

A New Rubberized Product for the Leather Shoe Industry

THE competition existing in all lines of industry is felt with especial keenness in the shoe industry. There economy in the direction of new materials is always desired and sought. The newer developments in rubber-coated fabrics in particular have yielded products well suited for definite uses in leather shoe manufacture. One of the latest of these is a rubberized fabric for shoe quarter and vamp linings, known as duPont Pontan. It is not only adequate for the service required of low priced shoes but it is also superior in many respects to similar rubberized products and even to the lower grades of sheepskin previously used.

Pontan is made of a specially constructed fabric not previously much used by rubber manufacturers. On this fabric as a base a special rubber coating is applied in such manner as to give it properties resembling leather, excellent wearing quality, and practically no tendency to peel. Pontan, generally speaking, looks like leather, is made in similar colors, and has a slightly fibrous surface not unlike some leather. When wrinkled or crushed, it takes on an even more leather-like appearance due to the grain-like creasing that develops. This quality of appearance is of prime importance, for a quarter-lining material must look like leather in order to be practical for use in shoes.

The material is economical because its square foot price compares favorably with that of the cheapest sheepskin that might be used, since it is made in full yard width, is uniform in texture and quality, and cuts to about 25 per cent better advantage than skins.

A further recommendation of this type of material is its workability, and it has the firmness of good leather, which permits it to lie smooth in the shoe. It has a back with characteristics similar to the flesh side of a skin, thus permitting ready pasting to the counter, also it has just enough plasticity and stretch to conform smoothly to the surface of the last and counter.

[1] S. G. Byam in *The DuPont Magazine*, May, 1930.

AIR CONDITIONING *in the* Dipped Rubber Goods Industry

EDGAR MAASS, PH.D.

IN the manufacture of dipped or seamless rubber goods the dipping is by far the most important operation of the whole process. At this point an unskilled man will prove helpless as soon as some difficulty arises, and many difficulties are to be expected. In a former article[1] different kinds of open and enclosed dipping machines were described. The operation of dipping with these machines is done as follows: The operator lowers the frame loaded with forms to the surface of the cement. A mechanical spindle device or a valve enables him to regulate the lowering very slowly as the forms touch the cement. If he operates the forms too quickly, little air bubbles will be pressed into the cement. These will settle afterwards on the forms and give faulty goods.

After the forms are dipped deeply enough, they are raised slowly. Most of the adhering cement runs back into the tank. When the form is entirely out of the cement, a little string of rubber flows from the tip of the form to the cement in the tank. When this string is flowing slowly, the operator removes it carefully with a wooden paddle. He then turns the forms over quickly so their tips point upward. It requires considerable experience to judge when the rubber is dry enough to remove the string. Too dry a string will destroy the viscosity of the cement and cause blisters, and if not dry enough, the rubber will flow on the form and give the goods uneven thickness. The dipper must watch the rubber on the forms, and when he sees it moving downwards, he turns the forms repeatedly until the rubber is dry enough. A second dip into the cement is made as soon as the rubber attains stability.

It is important that the rubber film be not too dry. Very dry rubber is difficult to dip and easily causes blisters. Before the forms are removed from the frame, the tank should be protected from dirt by wood or metal covers. After the dipping is completed, the forms are taken to the drying room having a temperature of 100 to 135° F., according to the quality of the solvent used in preparing the cement. As soon as the forms are dry enough so that the rubber does not stick when touched by hand, the goods are conveyed into the workroom, where the beads are rolled and the goods vulcanized and stripped from the forms.

[1] "The Manufacture of Machine Dipped Goods," INDIA RUBBER WORLD, Mar. 1, 1930, pp. 61-62.

When old type open machines are used, the dipping room must be ventilated thoroughly to remove the naphtha fumes which endanger the health of the workers. The danger of explosions is not very great because the content of naphtha fumes in the air is usually below that of an explosive mixture. The fire hazard is considerable, however, and most dipping rooms are equipped with steam valves, sand buckets, etc., which the law and the insurance companies require. No iron plates which may cause sparks should be on the floor. In some European factories the dippers wear felt shoes. In other plants carbon dioxide fire extinguishers are used. Fireproof sliding doors should be installed to cut off the dipping room from the rest of the plant in case of fire. If dipped goods manufacture occupies only a part of a factory system, the dipping plant should be in a building apart to reduce fire hazard.

The temperature of the dipping room is very important to make the process smooth running and to avoid those disturbances which force closing the plant for one or several working days. If the usual VMP naphtha is used, the room temperature can be raised to 95 to 100° F. without endangering the process. If the temperature is too low, evaporation proceeds too slowly, and the skin of rubber on the forms gets too thin. If the temperature is too high, it is liable to cause blisters on account of too rapid evaporation. It is essential that fresh air be distributed evenly through the room, otherwise the goods will become faulty by uneven thickness. The cement in the tanks may also become quite uneven because a certain amount of solvent evaporates directly out of the tanks. This can be lessened only by constant and careful use of tank covers.

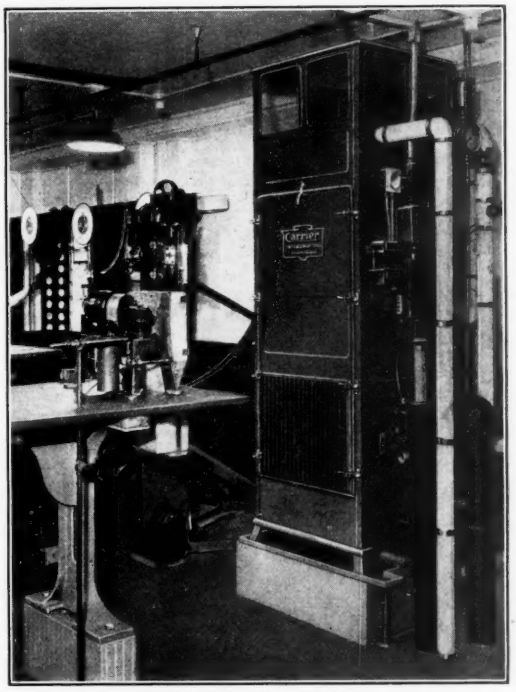


Fig. 1. Carrier Air Conditioning Unit

It has been long observed that the influence of climate and weather is very important. This is especially true in regard to the relative humidity of the air. Extremely low humidity occurs in the eastern United States with prevailing westerly or northerly winds and causes quick evaporation of the outer layers of cement on the forms. These layers form a thin skin of solid rubber over the under layers of the rubber cement adhering to the forms and thereby are a serious obstacle against total evaporation of the solvents. The process proceeds very slowly, and the

solid rubber may even slide on the remaining cement, producing folds which make the goods seconds.

Very high humidity, usually associated with easterly or southerly winds, causes a condensation of moisture on the rubber. When the goods are dipped only once, this fact may be disregarded. But when dipped several times, the moisture will be transferred into the cement tanks and cause millions of small bubbles of pinhole size to arise. These bubbles are quite different in size and number from those caused by too high temperature. A tank in which they have formed cannot be used for at least twelve hours especially when the barometric pressure of the air is high. Such a tank should be thoroughly stirred and rested over night until all the bubbles have moved to the surface where they will either pass into the air or can be taken off easily by skilled men. The surface layer of the cement is removed with a flat piece of tin which must be as broad as the tank is wide. The months July to September are most dangerous on account of their high and constantly changing relative humidity. Relative humidities above 80 and below 50 per cent are dangerous. In winter the air is usually drier and then a high humidity is not so dangerous at moderate outside temperature as at summer temperature.

In winter, the relative humidity can be lowered by raising the outside temperature. During summer this cannot be done on account of high temperatures. Therefore, a number of dipping plants have installed humidifiers and dehumidifiers, which are mostly mechanically controlled and maintain a certain degree of humidity in the dipping rooms all the time. During winter the humidifier which injects moisture into the air is generally used. This operation is simple, and the equipment cheap. Excellent equipment, built by reliable concerns experienced in this special field, is available at moderate prices.

Fig. 3. Spray Chamber

Figures 1 and 2 show different types of air conditioners that are used in the dipping industry. These machines can be used both for humidifying and dehumidifying. Figure 3 shows the spray chamber of the air conditioner, which is the essential part of the apparatus. Here the moisture is injected into the air. Figure 4 shows a phantom view of the interior of the apparatus shown in Figure 1. From the spray chamber the air passes through an eliminator which removes the excess moisture. Thence it proceeds to a heating coil where it is raised to the desired temperature. If one wishes to dehumidify the air, cold water, furnished either by a refrigerator or by a driven well, is used for the spray chamber. This water cools the air and thus forces it to give up its excess moisture. The dehumidifying process is more expensive on account of requiring this necessary supply of cold water. Nevertheless it will prove money-saving and will enable the manufacturer to work straight through the hottest summer days without slightest trouble. The size of the refrigerator depends, of course, on the size of the dipping rooms and the number of operated machines.

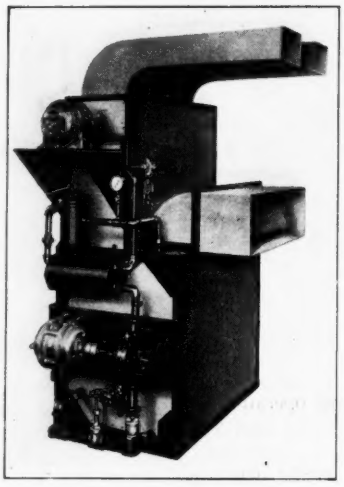


Fig. 2. York Humidifier

Most dipped rubber goods are either cured by the vapor curing or the wet curing process or both. Wet curing consists in immersing the goods in a mixture of carbon disulphide and sulphur chloride. Carbon disulphide has a very low boiling point, (115° F.). It therefore evaporates very quickly, causing condensation of moisture on the goods. Though this condensation can be neglected in most cases, it does much damage in manufacturing transparent nipples and finger cots. A manufacturer desiring to produce nipples similar to those imported in large quantities from Europe should have a conditioning system in his wet curing rooms. Otherwise he will not be successful with this work in the summer.

When the humidity of the air is extremely low, carbon disulphide will evaporate before the curing agent, sulphur chloride, has penetrated to the inner layers of the goods. The rubber is then vulcanized only on the surface and will deteriorate quickly. This is well known by every manufacturer of gloves and balloons. A slower evaporating substitute for the carbon disulphide has been sought and naphtha and benzol have been experimented with, but without much success. By far the best solvent is the carbon disulphide.

To effect a thorough cure evaporation must be slowed up to a certain degree. Nature does this when the humidity in the air is high enough. But in winter especially it has been found necessary to correct natural conditions by humidifying the air in the wet curing room. In this way an air conditioner will prove of highest value all year in the curing room of the plant and will help produce goods of fine appearance and long life.

After curing, the goods should be dried in a ventilated closet to free them of carbon disulphide. The temperature of this closet must be kept at about 95° F. Higher temperatures will darken and spoil the appearance of the goods.

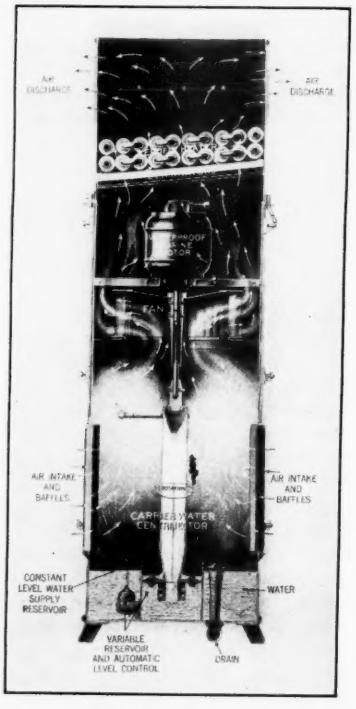
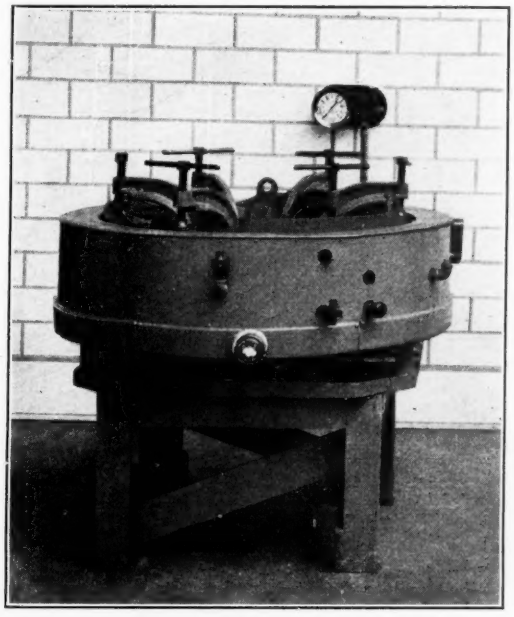


Fig. 4. Phantom View of Carrier Unit

The Revival of TIRE RETREADING

Full Circle Treaders Are the Latest Development in Vulcanizing Equipment in Which Pressure and Heat Are Applied Only to the Tire Tread

THE past two years have witnessed a revival of tire retreading after the original tread has been worn smooth or entirely worn out. The practice of retreading is almost as old as the use of tires themselves. In the early days of the industry tires were usually manufactured by the wrapped tread method: that is, the carcass was fabricated first and then the tread applied to the unvulcanized carcass in some instances, but more often after the carcass had been semi-vulcanized. When the tread had been applied, the whole was wrapped with a bandage of strong cotton tape to hold the tread firmly in place while the tire was vulcanized.



The Heintz Full Circle Retreader

Retreading in those days simply repeated the last process of manufacturing. When a worn tire was to be repaired, the tread remaining was peeled off, the surface of the casing thoroughly buffed, and coated with two or three applications of pure rubber cement. When the cement was dry, a new tread was applied. If the tire was to have a smooth tread, the new tread was of unvulcanized rubber. But if it was to be of nonskid design, a tread of semi-vulcanized rubber imprinted with the nonskid design and made in the form of a band, was applied to the casing. The nonskid tread depressions were filled with wet soapstone to make the contour of the tire smooth. After applying the bandage the tire was placed in a kettle and cured in open steam, vulcanizing the new tread and uniting tread and carcass. This process, however, had a tendency to overcure the thinner parts of the carcass, and many faulty retreads resulted. In fact, so many retreads were improperly done that the practice of retreading gradually died out, and with the advent of lower tire prices it became a question whether the service rendered was worth the cost of retreading.

The next retreaded tires to make their appearance came immediately after the war when tire prices were again at their highest peak. By this time the wrapped method of vulcanizing had completely disappeared, and all tires were cured in molds, with tread and carcass in one unit, the nonskid design being engraved in the mold.

These new type retreads were first put out by some of the smaller tire manufacturers, the method being to peel off the outside of the worn casing, from bead to bead, apply a new tread and sidewall, and cure in the original mold in which the tire was made. As these tires had all the appearances of new tires, they were often sold as such by the unscrupulous dealer or manufacturer. When legitimately sold, they were known as rebuilt tires, differing from the old retread in that the whole outer surface was covered with new rubber. The "gyp" or dishonest tire merchant was quick to see the possibilities in this field, and during the period from 1920 until 1926 numerous retreading plants and small factories flooded the market with rebuilt tires sold as new. However, laws were passed in most states making it compulsory to brand such tires as "rebuilt" or "retreaded."

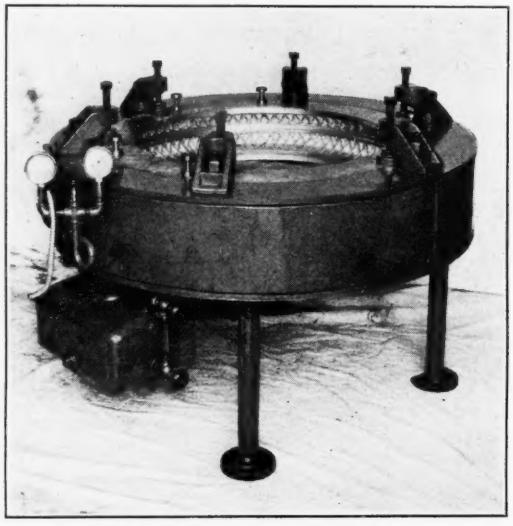
While the original rebuilt tires turned out by tire manufacturers could be recommended, and the materials and workmanship were good, those put out by the "gyp" had absolutely no merit. Materials were of the poorest, workmanship carelessly done, and no care given to the selection of casings to be used. The net result was that the retreaded tire again fell into bad repute and disappeared from the market.

The next experimental work with retreads was done by tire companies that sell to taxicab and bus companies on a mileage or rental basis. Therefore, these concerns were interested in rebuilt tires in order to get additional mileage at a lower cost. All their efforts were centered on quality, being very careful both as to workmanship and materials used. The results so far obtained have been quite a surprise both to the users and the manufacturers themselves. At least one tire company that does a large rental business with taxicabs in one of our largest cities is turning out 100 treads daily and is getting an average additional mileage of 15,000 miles at a cost of about $3 per retread or .0002 cents per mile. Here

again this added mileage is by far the cheapest mileage rendered by the tire. This is accounted for by the fact that in the original mileage rendered the manufacturing cost of the original tire as well as selling and advertising cost should be considered, while the retread has only the direct cost of applying the new tread. For the worn carcass can be valued only at junk prices and has no additional selling cost as the retread in this case is part of the original sale.

So the comparison stands something like this: New tire average mileage (for average tire used on taxicabs) 30,000 miles, approximate cost $15; Retread average 15,000 miles, approximate cost $3. From these figures it can be seen that retreading is very attractive to companies that sell tires at prices dependent on the mileage rendered. Not only those concerns but also the tire merchant who caters to the cheap trade, saw possibilities in the retread business. He had met demands with cheaply manufactured, unguaranteed tires, which were never any better than the claims made for them. Now he saw a chance to offer his customers a tire which would really give value for the money paid for it at a much lower price than it was possible to give the poorer quality new tire. Hence, we see again new retreading plants springing up and retreaded tires again appearing on the shelf of the tire dealer.

The new method of retreading is merely a revival of the mold cure with the mistakes of the older method corrected, supplemented by new and better adapted equipment, new stock preparing methods, and better materials. The process of applying the new tread has been simplified, and the cost of labor and materials lowered, so that a much better result is now obtained than was thought possible a few years ago. The new method differs first in the preparation of the worn carcass, care being taken in selecting only carcasses that are worth a retread or that are likely to last during the life of the new tread. This does not mean that a broken carcass should never be retreaded, as any casing which would justify a repair is usually worth retreading.



Lowell Full Circle Retreading Machine

The next step is to prepare the carcass for cementing. While this was done in the old method by peeling both the tread and sidewall down to the fabric and then buffing with a wire brush, in the new method the tire is put into a machine that rotates the tread surface against a circular rasp which is revolving at high speed. When the surface of the tread has become smooth, the casing is ready for the first coat of cement, the buffing having been done by the rasp at the same time it was smoothing off the tread surface. The sidewall is not disturbed and only a sufficient amount of the tread to make the surface smooth and round to conform to the contour of the tire. When the cement is thoroughly dry, using at least two coatings, the new tread is applied. Here again the new differs from the old method. Where the outer rubber was peeled down to the fabric, it was necessary to use one or more layers of cushion rubber to complete the union between carcass and tread as is done in making a new tire. But in the new way the old cushion is not removed; so all that is necessary is to apply the unvulcanized tread, which will unite easily as they are of like composition.

The next step is to vulcanize the new tread, and here is the greatest difference of all between the old and the new method. In the old method the tire was placed in a mold with an inflated airbag inside to make the tread conform to the shape and design of the mold as well as to hold tread and carcass firmly together until cured. The mold then was placed in a kettle and subjected to live steam of sufficient pressure to maintain it at curing temperature until vulcanized. As the whole tire was subjected to this temperature, the carcass always had a tendency to overcure, especially on the thinner parts of the sidewall and around the beads. This overcuring caused many of the carcasses to break before the new tread had worn out or given sufficient mileage to make retreading profitable.

In the new process no heat is applied to the carcass, but only to the outer surface of the tread. This is accomplished by the use of an open center circular mold which is so constructed as to fit snugly on the outer surface of the tread. This mold has a self-contained boiler usually heated by electricity although some use gas. The heat being applied to the outer tread surface, it first comes in contact with the new or unvulcanized tread and must pass through it before it reaches the carcass, and by the time the heat has penetrated the carcass, the tread is well cured. This is further helped by using tread compounds which cure rapidly at the lowest possible curing temperatures.

To this new vulcanizing method may be attributed the greater part of the success of these retread or recapped tires; first, because it eliminates carcass breaks due to overcures; second, as it does not overcure the carcass but only the new or unvulcanized tread, it gives a much better union between the two and almost wholly eliminates loose treads or tread peeling, both of which were major faults of the older systems. A report from one of the larger tire companies using this method states that of approximately 50 tires recapped daily for a period of six months, there was not one case of a separated tread; and that would be an enviable record for new tires as well.

Equipment of the type mentioned is now offered by two or three mold shops all using the same idea of heat applied only to the part vulcanized. Materials for retreading may be bought from any of the reputable tire manufacturers. If care is taken in the selection of both worn casing and materials used, it is reasonably certain that sufficient additional mileage can be obtained to warrant retreading by the new method.

Anticipating Boom Periods

When the bottom has dropped out of the market and the outlook is bluest, the shrewdest investors prepare for good times. Unlike the timid and short-visioned, who have no courage to buy until prices have crept up substantially, the far-seeing operators who know that financial history always repeats itself, find their largest profits in well anticipating the return of normalcy. What is true of security booms is true of swings of industrial prosperity. Their foundations are always laid in times of business let-downs, and those reap the advantage who realize this fact.

Those who produce and provide for producers must particularly prepare their sales campaigns long in advance of retailers, and nothing can help them more in the solution of their distribution problem than well-directed trade journal advertising, which, is but a superior form of salesmanship.

Why Colors Fade ON Rubber Goods

Fading Is Due to Bacteriological Action

GEORGE RICE

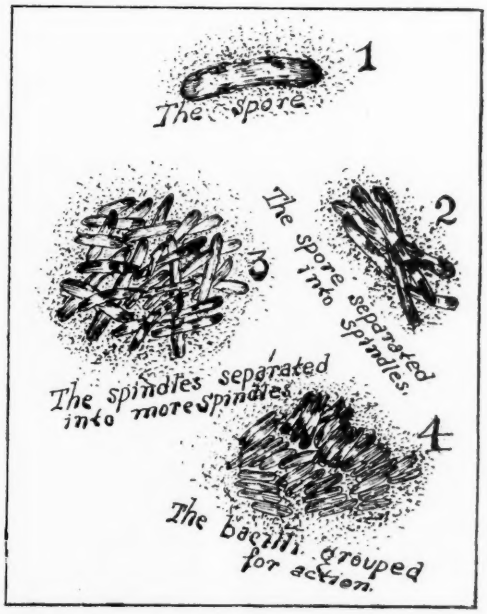
THE effect of sunlight, artificial light, heat, friction, the acids of perspiration and cleaning preparations upon the colors of rubber, rubberized wearing apparel, or rubber goods of any kind, often is not so detrimental as that caused by some form of bacteriological action. The bacilli of mildew, mold, rust, and even those which exist in the heavy air currents of a metropolis possess ample destructive powers to deaden a bright color on rubber just as they can dull the hues of any commodity once they actually attack it. The object of the powerful but exceedingly diminutive germs which float about space on particles of dust is not directed toward color destruction on rubber, wool, wood, or anything else. The color is simply in the way and gradually is eliminated as any barrier is when a hungry foe seeks food.

In the case of rubber goods it is the rubber which is desired, and if any coloring substance is present, this color too must vanish as the particles of rubber disappear. This often happens with goods in storage or during shipment overseas or when displayed in a poorly ventilated show window or even on shelves in stores. Sometimes the colony of living organisms will lodge on a rubber coat, cape, or hat when the article is left hanging in a wardrobe where the air is close and damp.

The owner of the garment will refer to the splotches made by the microbes as decay or rot or merely stains. The decay in rubber colors is caused by parasites of a fungus type that feed upon the material, for they have digestive organs in spite of their minute size.

Sun heat destroys bacteria by drying them up, but a certain degree of warmth is needed by the spore to multiply and live. Moisture and enough air to breathe are also required, although an abundance of air usually is not essential. Thus, rubber goods kept in well ventilated places seldom accumulate any of the spore of germs.

It is possible to find a great deal about the deteriorizing effect of germ life on colors by visiting a bacteriological laboratory having powerful microscopes handled by capable bacteriologists. Here may be seen the stages of existence of a species of bacilli which is particularly harmful to colors on rubber substances. Tests were made by placing the spore in its different stages of life between plates and enlarging it with photo-magnifying lenses on a screen with a lantern. The accompanying illustration shows what was exhibited.



Three Stages of Existence of the Dye Color Deteriorating Bacilli Magnified

First is the spore as shown at 1; then this same spore in the next stage becomes separated into spindles as shown at 2. These spindles proceed to separate into smaller spindles, all the while developing in size and power. The fragments then skim about in the drop of water between the two glass plates and group themselves for action on any substance which promises nourishment. This is the final stage of living for the bacilli, and they must feed or perish. Whatever their subsistence, the color on it also will be absorbed. Consequently we have fading.

Anything exposed constantly or only occasionally to the powerful rays of the sun is not likely to be subject to such organisms. But it is not practicable to keep rubber goods always exposed to the sun. The latter is not always shining. If a merchant displays some rubber goods in his window, he is as liable to see the colors fade by the action of sunlight as by germ action.

Neither can antiseptics always be used. Color-decaying fungi can be destroyed on wood by brushing it with creosote. But rubber commodities cannot be so treated and still be serviceable. Zinc chloride is, of course, an effective preservative for fabrics which are part rubber and part textile. Many experiments with various oils and distillation products have been and are being conducted by chemists to diminish or eradicate entirely germ action on colors by killing the organisms by shutting off their air supply.

Chloride of magnesium is used by some gabardine manufacturers to protect both the rubberized fabric thread structure and the color. All gray cloth to be rubber surfaced almost always is sized with a composition of calcium sulphate, glucose, china clay, dextrin or tallow or grease, for these substances give weight, stability, and wearing qualities to the fabric even though some of them come out of the yarns during the finishing processes. Sized goods are liable to mildew easily as the starchy ingredients in the sizing attract germs. In a recent case an epsom finish had been put on cloth ordered for rubberizing. Through some error in finishing, the epsom crystals were entangled with the fibers in a crushed state, making the texture coarse besides leaving attached to the threads a substance which became mildewed soon after the garments were marketed.

Usually enclosed air spaces are sought by germs. Therefore, if the places where rubber or rubber surfaced goods are kept are well ventilated, the danger of bacterial invasion will be reduced to a minimum.

The next article will be on the visionary fading of colors.

Dealers' Stocks of Automobile Tires

As of April 1, 1930[1]

FINAL statistics compiled by the Rubber Division, and here tabulated, show the stocks of automobile casings, inner tubes, and solid and cushion tires held by dealers reporting on April 1, 1930, as compared to April 1, 1929. The final average number of casings per dealer is 83.0, an increase of 7.9 casings over the average in the preliminary report issued on April 15, 1930. This is the greatest per dealer increase of any final report over a preliminary and may be explained by the receipt of over 8,000 questionnaires after the preparation of the preliminary report.

An analysis has been prepared of the reports from dealers having stocks of casings, and a comparison made to the survey of April 1, 1929. This year a greater percentage of reports fell into the class of dealers having less than 100 casings in stock, a smaller percentage of reports falling into the classes of dealers having more than 100 casings.

The number of dealers reporting stocks of solid or cushion tires on April 1, 1930, was 1,436, and the number of such tires on hand was 40,829, an average of 28.4 per dealer. This compares with 1,146 dealers on April 1, 1929, reporting 40,151 tires, or 35.0 tires per dealer.

Dealers were asked to report whether they were handling one, two, three, or more makes of tires. An analysis of the reports shows a greater percentage of dealers concentrating sales efforts on one make than in preceding years. It was disclosed also that dealers handling but one make of tire were holding 64.6 per cent of the total April 1, 1930, stock of casings; those handling two makes, 21.3 per cent; three makes, 5.5 per cent; while all others made up the remaining 8.6 per cent of the total casings inventory. It follows that the larger dealers carry more than two makes of tires.

The following questions were asked all dealers reporting: (1) Do you sell automobiles? (2) Do you sell gasoline? (3) Do you sell batteries? (4) Do you have equipment for checking wheel alinement? (5) Do you have equipment for machine-testing brakes? From the 31,677 reports received it was learned that 12,005 dealers, or 37.9 per cent, sell automobiles; 24,014, or 75.8 per cent, sell gasoline; 20,232, or 63.9 per cent, sell batteries; 12,277, or 38.8 per cent, have wheel alinement equipment; and 2,461, or 7.8 per cent, have machines for testing brakes.

A special analysis was made of the stocks of casings, inner tubes, and solids held by dealers engaged in various types of business. For instance, it was ascertained that dealers in automobiles and gasoline carry comparatively low stocks of tires; that those selling batteries had higher than average tire stocks; and that tire dealers with wheel alinement and brake testing equipment had the highest average stocks.

The average stocks of total casings per dealer on April 1 of the years 1925 to 1930 are: 62.2, 63.9, 70.6, 81.2, 94.4, 83.0; inner tubes, 102.1, 119.6, 120.9, 123.4, 143.5, 118.6; solids, etc., 20.1, 26.6, 24.7, 27.0, 35.0, 28.4.

Dealers' Stocks of Automobile Tires

	April 1, 1929			April 1, 1930		
	Number	Dealers Reporting	Average per Dealer	Number	Dealers Reporting	Average per Dealer
Total casings	2,383,907	25,245	94.4	2,550,222	30,717	83.0
Balloons	1,400,528	20,279	69.1	2,005,299	(*)	(*)
High pressure	983,379	(*)	(*)	544,923	24,309	22.4
Inner tubes	3,577,892	24,928	143.5	3,637,543	30,677	118.6
Solids	40,151	1,146	35.0	40,829	1,436	28.4

*Number of dealers not tabulated separately.

DEALERS' STOCKS OF AUTOMOBILE TIRES BY STATES, APRIL 1, 1930

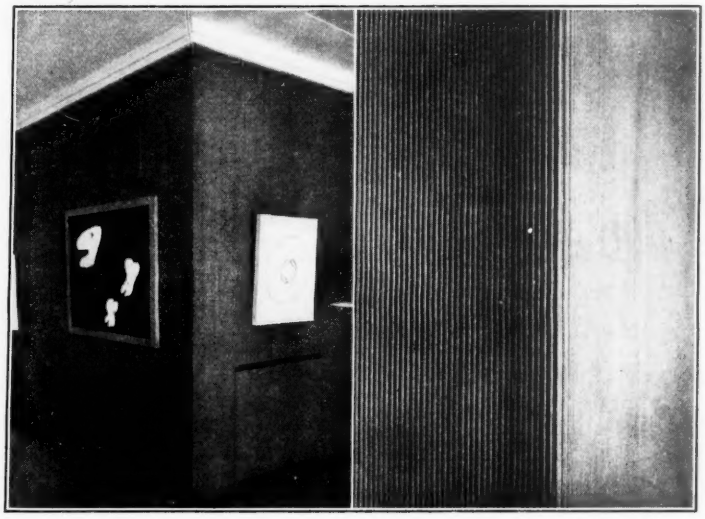
	Total Casings			High Pressure			Inner Tubes		
	No. of Dealers Reporting	No. of Tires on Hand	Average No. Per Dealer	No. of Dealers Reporting	No. of Tires on Hand	Average No. Per Dealer	No. of Dealers Reporting	No. of Tubes on Hand	Average No. Per Dealer
New England									
Maine	445	23,446	52.7	342	5,610		440	35,015	79.6
New Hampshire	229	18,513	80.8	186	4,290		225	22,959	102.0
Vermont	206	11,284	54.8	161	3,022		209	16,913	80.9
Massachusetts	721	74,518	103.4	526	13,285		712	100,911	141.7
Rhode Island	128	13,951	109.0	96	2,943		133	20,661	155.3
Connecticut	321	39,564	123.3	256	7,224		313	54,058	172.7
Middle Atlantic									
New York	2,038	228,047	111.9	1,572	39,378		2,031	309,663	152.5
New Jersey	661	61,270	92.7	485	10,868		666	86,501	130.0
Pennsylvania	2,578	190,888	74.0	1,895	35,695		2,577	258,884	100.5
East North Central									
Ohio	1,732	145,491	84.0	1,343	29,833		1,730	194,047	112.2
Indiana	999	77,956	78.0	809	17,147		1,007	114,221	113.4
Illinois	1,581	136,717	86.5	1,255	28,238		1,562	201,491	129.0
Michigan	1,320	100,920	76.5	992	17,433		1,323	148,475	112.2
Wisconsin	1,109	97,297	87.7	935	24,010		1,099	140,750	128.1
West North Central									
Minnesota	942	80,812	85.8	784	19,681		942	122,355	129.9
Iowa	960	68,158	71.0	811	17,080		941	104,519	111.1
Missouri	936	82,488	88.1	781	21,249		932	109,327	117.3
North Dakota	454	26,285	57.9	379	6,515		463	43,644	94.3
South Dakota	372	20,351	54.7	311	4,978		369	34,936	94.7
Nebraska	546	33,005	60.4	439	7,982		544	53,143	97.7
Kansas	804	91,340	113.6	686	18,533		795	112,039	140.9
South Atlantic									
Delaware	59	3,271	55.4	42	811		56	5,058	90.3
Maryland	415	38,698	93.2	301	8,283		423	55,974	132.3
Dist. of Columbia	64	9,722	151.9	45	1,171		64	13,448	210.1
Virginia	776	46,027	59.3	568	8,849		779	66,212	85.0
West Virginia	216	14,006	64.8	150	2,565		215	19,380	90.1
North Carolina	515	42,184	81.9	421	10,952		521	58,037	111.4
South Carolina	276	17,104	62.0	194	4,824		278	29,474	106.0
Georgia	443	32,645	73.7	368	8,273		446	55,591	124.6
Florida	319	31,846	99.8	257	6,041		311	39,763	127.9
East South Central									
Kentucky	409	27,968	68.4	319	6,109		412	46,505	112.9
Tennessee	365	33,237	91.1	287	6,934		371	48,439	130.6
Alabama	387	28,043	72.5	311	6,284		393	45,803	116.5
Mississippi	351	22,055	62.8	274	5,679		348	37,059	106.5
West South Central									
Arkansas	330	23,823	72.2	255	4,976		339	36,161	106.7
Louisiana	289	26,585	92.0	224	6,919		290	40,158	138.5
Oklahoma	517	56,573	109.4	430	10,304		512	72,226	141.1
Texas	1,477	111,554	75.5	1,257	30,509		1,486	182,644	122.9
Mountain									
Montana	313	25,280	80.8	255	5,143		313	37,665	120.3
Idaho	209	13,368	64.0	168	2,852		205	20,048	97.8
Wyoming	125	9,350	74.8	99	1,616		126	13,676	108.5
Colorado	412	35,763	86.8	335	8,980		418	42,487	101.6
New Mexico	154	11,623	75.5	128	2,186		151	15,393	101.9
Arizona	163	14,423	88.5	136	2,680		162	20,369	125.7
Utah	181	11,023	60.9	135	2,182		179	16,947	94.7
Nevada	52	3,352	64.5	41	615		50	5,028	100.6
Pacific									
Washington	684	47,132	68.9	564	11,490		692	67,381	97.4
Oregon	384	28,537	74.3	306	6,120		379	40,833	107.7
California	1,590	152,191	95.7	1,286	34,072		1,586	204,793	129.1
Unallocated	160	10,538	65.9	109	2,510		159	16,479	103.6
Total U. S.	30,717	2,550,222	83.0	24,309	544,923		30,677	3,637,543	118.6

[1] Special Circular No. 2684, Rubber Division, United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C.

FRENCH RUBBER NOVELTIES

Rubber Wall and Floor Coverings New Notes in Modern Decorative Schemes

THE interior decorator of today makes use of a number of industrial materials which his more conservative predecessor would never have thought of employing in any decorative scheme. Thus we find cork and aluminum among the materials brought together to obtain unusual effects, and now rubber seems to be coming to the fore. Up to quite recently rubber, if used at all, was selected more for its qualities of durability, ease of keeping clean, and, where it took the place of leather, for its cheapness. But now *le dernier cri* in ultra-fashionable interiors is the use of rubber not only for attractive rugs but also for novel wall coverings.

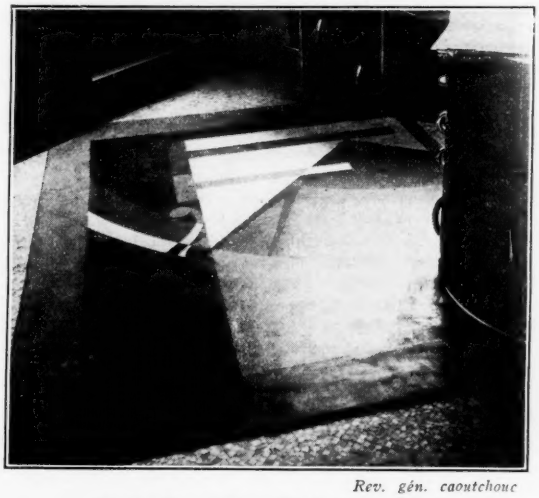


Rev. gén. caoutchouc

Fluted Rubber Wall Covering Enhances Pictures at Exhibit

In rubber floor coverings, favorite and tried designs of linoleums and tiled surfaces have generally been followed so far, but a change is to be noted. Manufacturers are now producing carpetings of rubber that are as delicate in coloring and fanciful in design as any modernistic interior decorator could desire, and these coverings are consequently in growing demand for smart interiors. Certainly hardly any exposition of modern decorative art in Paris can be visited without one finding more or less striking examples of this type of carpeting. In a recent issue of the *Revue Générale du Caoutchouc* two photographs are shown of rubber carpets seen at the Salon d'Automne. The one has a simple but effective stripe design and covers an immense corridor; the other is a rug for a studio and is carried out in thoroughly modernistic fantasy of design and coloring.

A previous issue of the same paper mentions a new use for rubber, which our contemporary thinks deserves the attention of the rubber manufacturer. It appears that in an art gallery recently opened in Paris the architect hit upon the idea of using fluted rubber in neutral tints for covering the walls against which the pictures are to be hung. The material is not only strong, washable, and fairly good-looking, but it offers a splendid neutral background against which the paintings show up admirably.

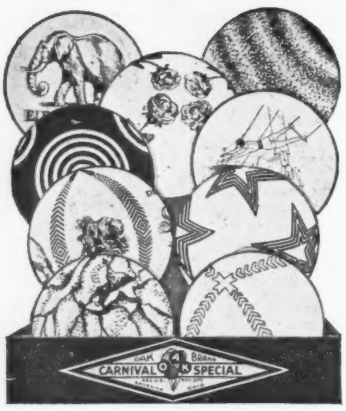


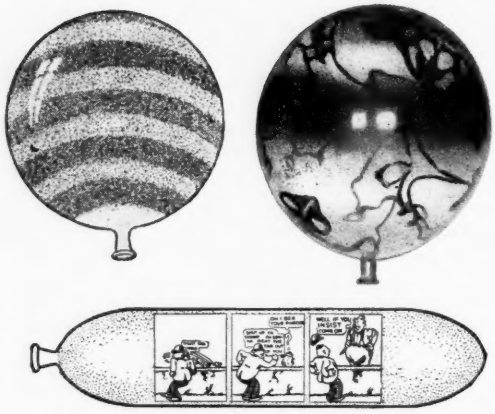
Rev. gén. caoutchouc

Studio Rug with a Modernistic Motif

Rev. gén. caoutchouc

Colorful Stripes on a Rubber Rug for a Corridor





Bigger and Better Balloons

Variegated Designs, Novel Shapes, and Profitable Uses Make These Toys More Popular Than Ever

'WAY back in 1856 appeared one of the earliest patents for a toy balloon, and during that same year two others were issued, indicating a fad for these toys. Decades have passed, but the appeal of such playthings has not. On the contrary, time has increased the popularity of the balloon, bringing it new ideas for size, shape, ornamentation, and use. Efficient manufacturing methods, quantity production, and competition have so reduced prices that a plain toy balloon has now become merely the background on which to place fanciful designs and variegated coloring. Concentrated dyes, bright inks, elaborate cuts for imprints, bands of color applied by air brush, and other means are utilized to simulate calicoes and rainbows, marble and onyx, to depict animals, flowers, and landscapes. The illustrations of this article offer some inkling of the development of the balloon.

Consider its shape, for instance. From the original round, plain style the balloon has grown long and lean, short and stout, egg-shaped, or like an Indian club, in giant or normal proportions, indeed 'most any shape at all; and in many cases the evolution is not complete until a chicken, a soldier, a watermelon, a dirigible, a pig, or even the devil himself has been produced. These novelties are much sought after not only by youngsters but by their elders, as souvenirs, decorations, and even as amusing playthings. For the appeal of the balloon recognizes no age limits, and the spirit of youth never dies.

Another interesting feature about the modern balloon is its color scheme. Although the plain one in solid tones is still popular, chiefly as premiums and for commercial advertising, particularly for foreign trade, demand inclines toward the latest achievements in color ornamentation. Some balloons are half one shade and half another. Others relieve the monotone by stripes, fancy designs, or pictures in contrasting hues. This variety of colors seems to have been borrowed from the rainbow, although the rainbow, perhaps, never saw some of the tints that brighten a balloon. Pastel as well as deeper shades create this blaze of glory. Greens, blues, yellows, purples, red, white, black, rose, orange, and even silver and gold thus burst forth in balloonland. Several colors, moreover, often harmonize on one balloon, enhancing its attractiveness. The intensity of the color is affected, too, by the balloon itself, whether it is compound, opaque, or transparent.

One of the current best-sellers is a conglomeration of color emphasizing a rainbow stripe as well as a mottled motif. This latter is particularly effective, frequently resembling the work of a Cubist artist run riot. The result on the balloon undoubtedly is quite pleasing, and no pattern ever is exactly duplicated.

Stripes also play an important part in the decorative plans of balloondom. The lines usually run longitudinally, but a recent creation sports horizontal stripes with the middle one in a color different from the other two.

A modification of the stripe series is the concentric circle resembling a target, repeated on the balloon in several places. The same idea is carried out with stars.

The prints gracing many of these bubbles of joy are beautiful and educational. One of the prettiest in this group is the bouquet or floral design. Baskets or bouquets of flowers in natural colors make a dainty display. Other prints show faces of lovely ladies or well-known "movie" luminaries. The bathing girl in various poses at the beach is quite popular. Nor is it unusual to see a speeding train or a dirigible floating in the air on an airship balloon.

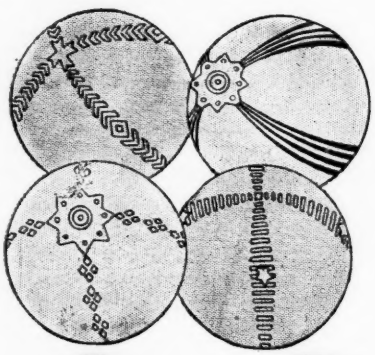
Birds and animals make enticing subjects. The tri-picture prints boast three different animals separated by a stripe or a bar of contrasting color. The panel print revealing an animal within a border made by the alphabet, entertains children. So does the nursery-rhyme balloon with the jingle and the illustration of principal characters.

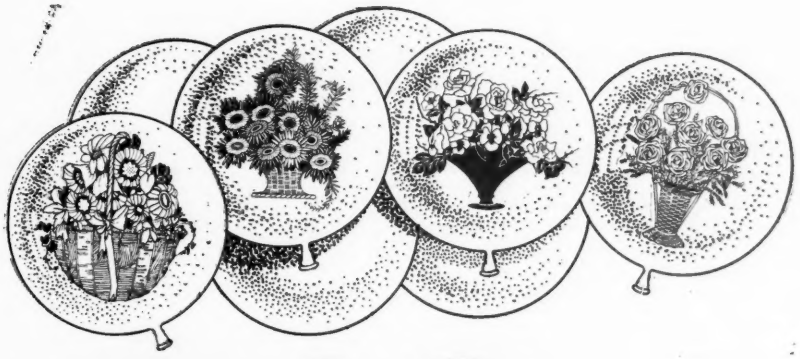
A novel type is the fish bowl balloon of pure rubber, giving the appearance of glass when inflated. It is printed all over with green seaweed, and gold fish in natural colors float about lazily.

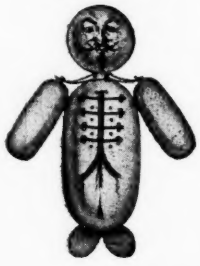
The silhouette balloon is striking, furnishing in four flaming colors and high luster finish a beautiful Egyptian scene: a sheik riding a camel on the desert sands. Another attractive specimen, the Arctic balloon, in an air brush and stencil design glorifies the lands made famous by Rear Admiral Byrd. In silhouette are a ship, a plane circling the skies, and a man mushing a dog-sled on the snow white base. The vivid colors in the background suggest the very rare aurora borealis. Other prints include the quaint windmill, assorted stripes made of "tricky" lines, and even a comic strip.

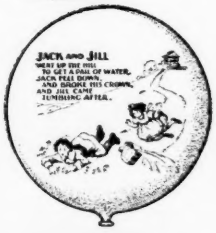
The circus supplies ideal material for balloon decorations. Here venders find ready sales, especially when their products reflect the atmosphere of the Big Top. Just as the antics of the clown prove highly diverting to his audience, young or old, so, too, do views of these funmakers in characteristic "shots" go over big on balloons. The bareback rider and the daredevil of the trapeze as well as the fascinating, if somewhat terrifying beasts also are pictured.

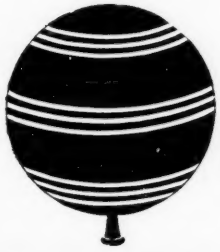
The Merry-Go-Round balloon is quite

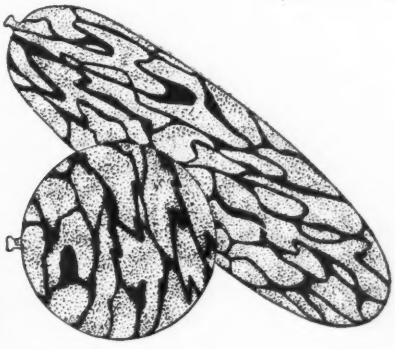


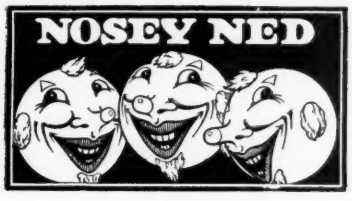


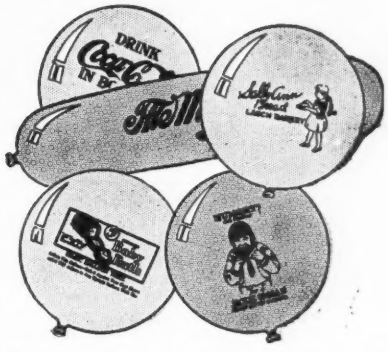












catchy with its cleverly worked out designs in bright hues. The canopy on top and the prancing ponies and other animals combine color and action.

Holidays likewise create sales for special balloons. Prints of Uncle Sam, the American flag, revered presidents, and such historic events as Columbus discovering America, the landing of the Pilgrims, the signing of the Declaration of Independence, and Washington crossing the Delaware will satisfy even the most patriotic. Hallowe'en is symbolized in black on gay orange by a witch astride her broom, accompanied by her cat and owl retinue. Santa Claus appears in his customary haunts on Christmas Eve. Nor are the Thanksgiving turkey or the Easter bunny forgotten.

Fraternal organizations often find it useful to put their emblems on balloons.

Novelty balloons enlist a large following. One of the best numbers is the skull balloon with the skull in dead white on solid black. A similar model is the grinning negro. The heathen Chinee of the long queue also is mirth-provoking. Other funny faces are revealed, such as the tramp and his elongated nose, the humorous and bewhiskered gentleman with his long, pointed red nose, or the clown displaying queer triangular rubber ears. The soldier and the sailor prove irresistible. A major of large and small balloons is an amusing toss-up item, always landing on large cardboard feet.

The watermelon balloon actually resembles the fruit with its green imprint and peculiar form. The balloon printed and shaped like a football should appeal to girdiron fans. A model reflecting the aeronautical influence of the times copies the dirigible "Los Angeles." The ship's outlines are in blue on a white background. A silver Zeppelin balloon also is available.

Balloons come in standard and giant sizes. When inflated, the round types vary from 6 to 44 inches, and the airships from 3 by 9 to 12 by 42 inches. One slim model swells to 8 by 84 inches. Some balloon!

Squawker balloons are excellent noisemakers. Many models, both round and airship, boast the sound device. The craze for color has captured even the plain stem squawker, enlivening it with red, white, and blue spiral stripes. This color scheme, furthermore, has been adopted for stem valves. Squawker stems and closing valves appear in several sizes and shapes, in wood or metal. One of the latter works automatically. Another improved model, the "Twistit," is airtight and easy to operate. After inflating the balloon, twist the valve two or three times; to deflate, twist in the opposite direction. A safety feature of this convenience is that being fastened on the outside of the neck of the balloon instead of inside where the air might force it out, the valve cannot slip from the balloon and lodge in the child's throat.

The balloon, besides providing amusement, likewise serves many useful purposes. The toy balloon is employed to determine the air ceiling for aviators. Laboratory workers have even utilized balloons as aids in filtration pressure.

But perhaps the most important business role of this toy is as an advertising medium. Given away as souvenirs with the name of the company, its trademark, or chief product imprinted and maybe pictured on the balloon, it forms most satisfactory means of bringing an organization before the people. It is inexpensive; yet it reaches not only the kiddies but also their parents, especially the women, who, statistics have indicated, comprise the greatest part of the buying public. Many tire organizations and service stations have been quick to realize the possibilities of this form of advertising. Certainly its use could be more widely extended to advantage.

We are indebted to The Oak Rubber Co., Ravenna, O., for these illustrations.

Sponge Rubber Manufacture

THE following abstracts of United States patents relating to the various applications of sponge rubber manufacture are concluded from INDIA RUBBER WORLD, May 1, 1930.

57. Netz et al, 1,534,654, Apr. 21, 1925. Filling for boxing gloves comprises a body of molded sponge rubber having an outer skin, and a recess in one of its sides, and a thumb piece of molded sponge rubber having a shank adapted to fit within the recess.

58. Freedlander et al, 1,536,288, May 5, 1925. Masticate smoke sheets, add rosin oil, slowly sift in finely powdered sulphur, add finely powdered dehydrated lime, add gas black while being masticated on a mill at 130° to 180° F.; bring ethylideneaniline to approximately 212° F. and add it to the mass; add ammonium bicarbonate, allow the mass to cool to 70° F.

59. Brucker, 1,536,700, May 5, 1925. Making horns and amplifiers consists in placing rubber sheet in the mouth of a mold having a cooperating core occupying the mouth portion only, and placing in the neck of the mold a compound shaped like a hollow biscuit with a blower inside, and vulcanizing it.

60. Flemming, 1,538,789, May 19, 1925. Hard rubber articles are made by pressing to the desired shape a hard rubber compound containing a blower, vulcanizing it in a mold, and chilling the surface of the article. (See group illustration.)

61. Johnston et al, 1,538,818, May 19, 1925. A multiple-celled battery container is composed of solid hard rubber cells, and a cellular hard rubber structure completely surrounds the cells and is vulcanized thereto.

62. Willis, 1,540,444, June 2, 1925. Making reproductions consists in forming impression matrices by vulcanizing a sponge rubber compound in a mold with an article to be reproduced, and then molding reproductions of the article in the matrix thus produced.

63. Ellis et al, 1,544,534, June 30, 1925. Sponge rubber is produced by chlorination of loosely packed mass of rubber at a pressure of 125 pounds per square inch at 25° C.

64. Stringfield, 1,544,699, July 7, 1925. Hydrogen sulphide and sulphur dioxide is introduced in rubber by means of silica gel.

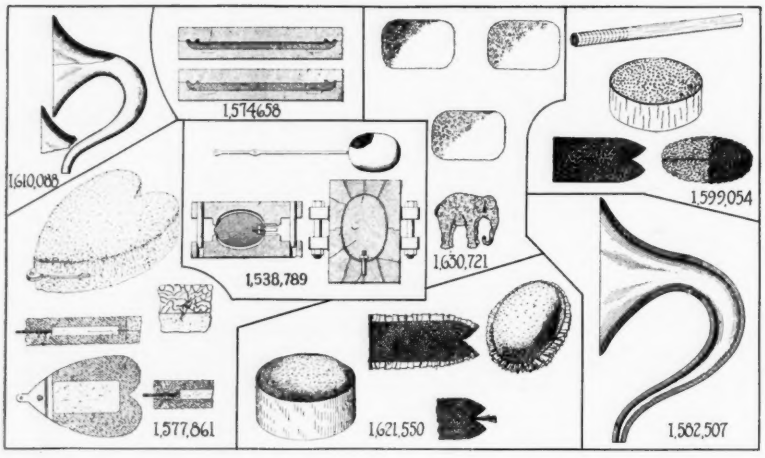
65. Arias, 1,551,452, Aug. 25, 1925. A cushion comprises a body of sponge rubber with endless ribs on its under-surface.

66. Moore, 1,565,582, Dec. 15, 1925. A pad has an elastic sheath that fits over the arm of a crutch and a sponge rubber cushion in the sheath.

67. Bash, 1,565,775, Dec. 15, 1925. A pad for applying cosmetics comprises a body of sponge rubber and an envelope of thin rubber inclosing the body.

68. Freedlander et al, 1,565,995, Dec. 15, 1925. A composition comprises masticated smoked sheet rubber, fine sulphur, fine lime, rosin oil, ethylideneaniline, and ammonium bicarbonate.

69. Pierce, 1,568,238, Jan. 5, 1926. Shoulder pad and joint guard comprise foam rubber sheet, heavy covering with lighter marginal strip, reenforcing strip beneath the foam rubber, and stitching passing through marginal strip, rubber, and reenforcing strip.



70. Johnston, 1,574,658, Feb. 23, 1926. A blowing agent is incorporated in the rubber compound, which is formed slightly smaller than the finished article, and then vulcanized in a mold whereby the article is expanded to the desired size and shape. (See group illustration.)

71. Henry, 1,577,861, Mar. 23, 1926. A soap holder comprises a sponge rubber body having a central space and a mouth for receiving a cake of soap, rubber sheets united to the body and lining the mouth, the sheets having fastenings for closing the mouth, and having tabs for opening the latter. (See group illustration.)

72. Brucker, 1,582,507, Apr. 27, 1926. Horn or amplifier has a cellular hard rubber bell and a solid hard rubber neck integrally united thereto. (See group illustration.)

73. Miller, 1,584,694, May 11, 1926. A covering comprising a flat thick sponge rubber base surmounted by a flat thin facing sheet integrated with the base, formed partly of rubber, and extending over both the top and edges of the base portion.

74. Dickey, 1,586,076, May 25, 1926. The process comprises forcing a perforating plate through unvulcanized sheet rubber, passing the perforating means carrying the unvulcanized rubber through openings in a mold, the plate forming the other mold element, and vulcanizing the rubber in the mold.

75. Marshall, 1,587,486, June 1, 1926. Sponge rubber composed of crude rubber, stearic acid, sulphur, litharge, zinc oxide, and a petroleum product, is mixed in varying proportions according to the intended use.

76. Miller, 1,588,487, June 15, 1926. A sheet has faces of sponge rubber in at least two colors and each face differently ornamented.

77. Leathers, 1,595,203, Aug. 10, 1926. In a toy, the combination of stiffening members, molded sponge rubber flesh, dense rubber covering, and a dipped rubber skin, the stiffening members are vulcanized in place.

78. Kuhlke, 1,597,904, Aug. 31, 1926. Resilient balls are made by forming a sphere by winding wire about a mass of uncured rubber containing a volatilizing agent, and vulcanizing whereby a portion of the rubber penetrates the interstices of the sphere, and the remainder is converted into sponge rubber.

79. Lehr, 1,599,054, Sept. 7, 1926. Making rubber sponges consists in producing a rubber cylinder having a spongy interior and peripheral skin, cutting the cylinder transversely to produce cylindrical blocks, applying cement to the peripheral skin of the blocks, and folding the peripheral skin on a median line, and pressing the portions on each side of the median line into adhering contact. (See group illustration.)

80. Bishop, 1,599,947, Sept. 14, 1926. A toy snake has a vulcanized rubber body being divided in sections by deep notches, and a fabric reenforcement centrally of the body, the notches reaching nearly to the fabric but spaced therefrom to provide connecting webs of rubber between the sections and surrounding and protecting the fabric.

81. Miller, 1,600,194, Sept. 14, 1926. A sponge rubber toy, simulating a cigar or a cigarette, has the sponge appearing in cut section at one end.

82. Riddell, 1,602,454, Oct. 12, 1926. Football player's uniform has pockets filled with sponge rubber.

83. North, 1,602,624, Oct. 12, 1926. Incorporating ammonium carbonate into a rubber mix comprises preparing a suspension of ammonium carbonate in petroleum oil and adding the suspension to the rubber on the mixing rolls.

84. Gammeter, 1,604,272, Oct. 26, 1926. A metal spider is supported in heat conductive relation with a metallic rim mold, with the ends of its arms projecting into the mold cavity and supporting a heat-expansible body on the ends of the arms, and expanding the rim material to fill the mold by applied heat.

85. Freedlander et al, 1,606,522, Nov. 9, 1926. A polo mallet comprises a shaft and a head composed of vulcanized sponge rubber having a covering and a hollow interior.

86. Dickey, 1,608,727, Nov. 30, 1926. Producing fabric covered perforated rubber includes bringing unvulcanized rubber and a fabric together, perforating the rubber and fabric, vulcanizing and sponging the rubber while the perforating means are within the perforations.

87. Harrison, 1,610,088, Dec. 7, 1926. An amplifying horn comprises a body of hard cellular rubber having a smooth lining of soft rubber serving to dampen vibration set up in the hard rubber. (See group illustration.)

88. Hood et al, 1,610,286, Dec. 14, 1926. A cushion comprises a sheet of sponge rubber having beveled edges and one surface including the edges, covered smoothly with fibrous material, which is united thereto by vulcanization, and having the other surface uncovered.

89. Pratt, 1,614,019, Jan. 11, 1927. An uncoagulated aqueous paste comprising dispersed rubber globules and vulcanizing agents is vulcanized in a mold.

90. Schwartz, 1,614,853, Jan. 18, 1927. A tennis ball comprises a hollow spherical core of dense rubber, the core retaining gas under pressure, and a surfacing of sheeted sponge rubber attached thereto.

91. Balch, 1,617,511, Feb. 15, 1927. A sponge rubber slab is cut by blunt-edged knives equally from opposite sides along the desired line of cut until it is substantially solid, and severing it while so compressed by bringing the blunt edges together.

92. Lehr, 1,621,550, Mar. 22, 1927. Rubber sponges are made from cylindrical rubber blocks having exposed cells on the parallel faces and a peripheral skin, by placing side by side the peripheral skin and ornamental strip and progressively folding the skin on a median line, leaving margins projecting beyond the edges, and cementing the parts together. (See group illustration.)

93. Flowers, 1,628,717, May 17, 1927. A toy comprising a sponge rubber ball has a recess part way to its center, a metal plate embedded in the ball and forming the bottom of the recess, and a bell secured to the plate in the recess.

94. Hood, 1,628,979, May 17, 1927. Sponge rubber bodies of extended length are made by placing sponge rubber compound in a flexible tube of larger cross sectional area in which the rubber is cured under conditions which will produce sponge rubber and cause the expanding compound to stretch the tube to cylindrical shape and place it under tension.

95. Wedlock, 1,629,013, May 17, 1927. A strip of sponge rubber of uniform cross-section, normally straight and too long to produce in a mold at a single cure, is produced by drawing sponge rubber compound through a heated die where it is vulcanized.

96. Roberts, 1,630,135, May 24, 1927. An inner sole comprises a top layer of cork, fabric covering the upper face of the cork, and a lower layer of sponge rubber.

97. Snelling, 1,630,721, May 31, 1927. Articles of sponge rubber are formed by cooling a mixture of rubber latex, adding particles of ice to the medium, while still liquid or semi-solid, and coagulating the porous mass of rubber. (See group illustration.)

98. O'Neill, 1,644,027, Oct. 4, 1927. A bouncing doll is composed of compressible and extensible springs and sponge rubber, the springs being embedded in the rubber.

99. Lower, 1,645,248, Oct. 11, 1927. Articles of sponge rubber having a fabric covering are made by shaping the fabric to that of the finished article, applying a layer of rubber to the interior surface of the felt, and vulcanizing the compound sheet with the felt in contact with one surface of a mold.

100. Lower, 1,645,604, Oct. 18, 1927. A slab of rubber compounded to expand and form sponge rubber on vulcanization is covered with a sheet of fabric, the edges being secured around the rubber slab; the article is placed into a closed chamber with the fabric out of contact with the walls, and the slab vulcanized. This expands the rubber and stretches the fabric, which assumes a natural curvature about the edges of the slab while the fabric about the edges is out of contact with the walls of the chamber.

101. Boehlke, 1,648,633, Nov. 8, 1927. A foot arch includes a core of sponge rubber.

102. Seckbach, 1,650,743, Nov. 29, 1927. A head rest for baths comprises rubber sponge and a water-tight film covering the upper and front sides thereof.

103. Wilderman, 1,651,567, Dec. 6, 1927. A porous ebonite body is made by pressing partially cured ebonite particles into a mass having a greater volume than the sum of the volumes of the individual particles, and then subjecting the mass to vulcanization.

104. Merrill, 1,659,371, Feb. 14, 1928. The method of making rubber cushions comprises semi-curing sponge rubber in sheet form, applying cement, wrapping the sheet spirally to form a core, applying a soft rubber shell to the core, and vulcanizing the shell and core together.

105. Vernet, 1,659,644, Feb. 21, 1928. A soap dish has bottom, side, and end walls composed of sponge rubber.

106. Strock, 1,660,729, Feb. 28, 1928. A soap tray comprises a sponge rubber body having a concavity in its upper surface for the reception of soap and a rubber band surrounding and connected with the perimeter of the sponge rubber body.

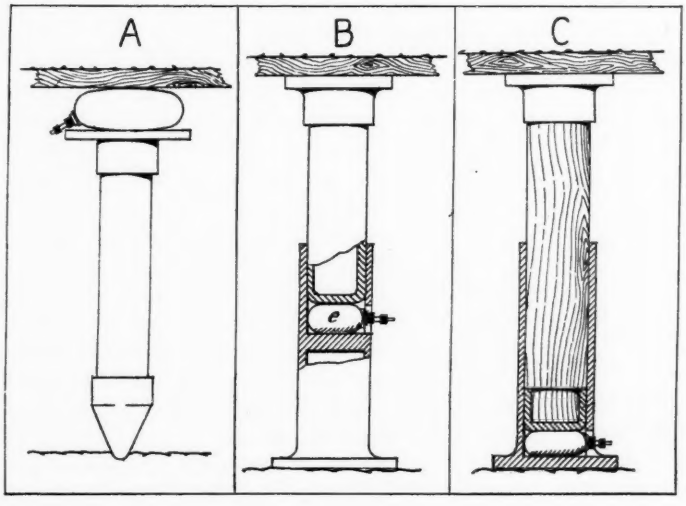
107. Miller, 1,674,053, June 19, 1928. Sponge rubber is made by incorporating into an unvulcanized sponge rubber stock particles of vulcanized sponge rubber, forming, and vulcanizing.

108. Morimoto, 1,685,954, Oct. 2, 1928. A thin layer of sponge rubber is attached to the surface of rubber goods by rubber solution made by dissolving rubber in benzine, naphtha, etc., and adding to this solution mixtures and the materials which convert rubber into spongy rubber, then applying to the surface of rubber goods, and vulcanizing.

109. Silver, 1,696,129, Dec. 18, 1928. Making auxiliary heel linings consists in forming a sheet of sponge rubber between two pieces of fabric to which the rubber is vulcanized, coating the fabric on both sides with adhesive, drying, cutting blanks of the desired shape from the sheet, and then splitting each blank to form a lining having a sponge rubber face and a backing of adhesive coated fabric.

110. Maranville, 1,712,965, May 14, 1929. Structural material comprises a body of cellular hard rubber, and a metal facing sheet united therewith by a bonding layer consisting of a balata-like, heat-plastic, artificial isomer of rubber.

111. Noar, 1,717,168, June 11, 1929. Sponge rubber articles are formed by surface vulcanizing a prepared rubber mass for the formation of sponge rubber, and subsequently generating gas within and vulcanizing the surface vulcanized mass in a mold.



Airbags Used in Mining Operations

Mine Prop Air Bag

The ordinary wooden props used in tunneling mining operations are removed with difficulty. Various expedients have been tried to make the removal of mine props easier. A recent invention[1] for this purpose makes use of a prop of telescoping construction utilizing an inflatable rubber airbag to apply an adjustable pressure. The construction and operation of three different types of this prop are indicated in the illustration.

Figure *A* shows a prop shod with a point and provided with a flat top piece, between which and the roof plank, is inserted an inflatable rubber airbag.

Figure *B* illustrates an all metal tubular prop with the airbag between the upper and lower telescoping sections.

Figure *C* similarly illustrates another telescoping tubular prop in which the airbag occupies a position in the bottom of the lower section.

[1] U. S. Patent No. 1,752,101, Mar. 25, 1930.

EDITORIALS

Warding Off a Crisis

THE Stevenson Restriction Act, so generally condemned as a "racketeering" scheme directed against American rubber users, was at least of foreign origin. But even that much could not be said of a more recent proposition, which, had it been embodied into law, would have, even though inadvertently, handicapped American industry scarcely less seriously than the late and unlamented Stevenson Act. While perhaps not so intended, the Blaine amendment to the Smoot-Hawley tariff measure was, too, a rubber restriction device. Presumably designed to benefit American labor by excluding all materials produced by contract or indentured labor, it even could have banned the importation of some 80,000 tons of crude rubber produced under usual labor agreements abroad.

The likelihood of over one-sixth of a year's supply of raw material being cut off ruthlessly, of an artificial shortage being created, of encouragement being given to foreign selling pools, and of a sharp price enhancement that would dislocate all cost-schedules and upset all marketing plans was no pleasant prospect for American rubber manufacturers striving to recover from the recent setback to trade in general.

Only through the vigilance and tireless work of The Rubber Manufacturers Association, Inc., and several individual industrial leaders was the blundering corrected in the nick of time, the situation being saved by making the ruling effective only on goods that can be produced in the United States. With equal zeal and effort the association and leading rubber company representatives likewise strove to induce the tariff conferees to reconsider the Shortridge amendment putting a 7-cent duty on long staple cotton, material so essential for the construction especially of the heavier types of tires, of which but a relatively minor quantity is grown in the country. Although it was made plain that such a duty would not increase the use of American cotton and would be a burden on tire-makers and consumers, political expediency proved more potent than general economic advantage and the objectionable duty was allowed to remain.

* * *

From Vulcanizing to Freezing

THE practicality of rubber research may again be curiously demonstrated. Golf balls are ordinarily produced by winding rubber thread at high tension upon solid or similar rubber cores at common temperature. The behavior of rubber when released from a frigid state has suggested a process whereby the resiliency of the ball can be so enhanced that it will have a flight far beyond that of many noted types. The secret, it is hinted, lies in reducing the temperature of the core to 45° below zero F. and retarding its expansion until it can be encased within the balata or gutta percha hemispheres forming the shell.

* * *

Silver's Drop and Cheap Rubber

THAT higher prices for crude rubber are contingent on the stabilization of silver prices and the demand for gold, is asserted by Clifford C. Johnston, writing in the *N. Y. Journal of Commerce*. He claims that last fall's drop in security prices was not a major influence in depressing the price of rubber, but that the recession in the value of various Far East commodities is due plainly to the steady decline in the value of silver from about 70 cents a fine ounce in 1925 to 40 cents early in 1930. Such decline has been caused by the demonetization of silver in countries where its circulation had been maintained at a fixed ratio to gold; and with the renouncing of bimetallism, demand for the metal has sharply lessened, although its production has not diminished in proportion. As a contributing factor in the commodity price sag, he notes the increased demand for gold in Far East countries now on a gold basis or gradually renouncing bimetallism.

The urge to produce has been increasingly felt by estate workers and native planters since silver began losing its buying power. Overproduction, in disregard of all regulatory schemes, to which low prices for rubber are ascribed, has been most apparent since 1925 when silver started to decline. He points out that while the British Government tried with export control to aid its nationals engaged in rubber planting, it found that it could not stem the tide and finally abolished all restrictions on a warning from British bankers that the harm coming from a scarcity of gold and a superabundance of silver, would far more than offset any benefits that might be derived from a continuance of the uneconomic Stevenson control plan.

Of the new efforts of a British-Dutch group to control rubber production and to stabilize prices, he believes that the plan is doomed to failure. He says that at best the group can regulate but one-half the rubber output. If, however, it had monopolistic advantage like the Franco-German potash combine, the Chilean nitrate control, or the South African diamond cartel, it might achieve a fair degree of success.

"If it were not for these abortive attempts on the part of producers to regulate production," he says, "a swing in the price of rubber, tin, and other far eastern commodities now being sold at or below the average costs of production would be generally anticipated."

What the Rubber Chemists Are Doing

Chlorinated Rubber[1]

CHLORINATED rubber is made by reacting on unvulcanized rubber with chlorine. It may vary in its combined chlorine content from less than 40 to more than 70 per cent, depending upon its mode of preparation and the use for which it is intended. All of these varieties are much more readily soluble than the untreated rubber, but the solutions vary greatly in viscosity as well as in other properties. Benzol and its homologs, toluol and xylol, as well as solvent naphtha, are good solvents for chlorinated rubber. Other suitable solvents are the chlorbenzols, carbon tetrachloride, carbon bisulphide, trichlorethylene, and the like.

Solutions of chlorinated rubber in solvents such as those mentioned are suitable for use as varnishes, impregnating compositions, etc., but for many purposes the addition of drying oils, particularly Chinese wood oil, or tung oil, is desirable. Such additions improve the "body" of the varnish, as well as the water resistance and flowing qualities. When wood oil is employed, it should preferably be that known to the trade as "prepared wood oil" made by treating the oil near its polymerization point and adding rosin or rosin derivatives, driers, etc., since the untreated oil dries to a frosted or flat finish. To make clear, permanent varnishes from chlorinated rubber and tung oil the time of cooking of the oil is reduced for low chlorination of the rubber and increased for high chlorination.

Formula for Varnish

The following is an illustrative example of the way in which varnishes such as are contemplated in this invention may be prepared, to the details of which it is, of course, not limited.

Twenty-five parts by weight of highly chlorinated rubber, i. e., that containing 67 per cent or more of chlorine, above mentioned, were dissolved in 50 parts by weight of solvent naphtha, and when solution was complete, 75 parts by weight of "prepared" wood oil were stirred in, no heat being employed in the process. The "prepared" wood oil was made by cooking the raw oil for 45 minutes at 200° C. after treatment with about 12 per cent of limed rosin. It contained no benzine or the like, being thinned with turpentine and solvent naphtha, since many aliphatic hydrocarbons tend to precipitate chlorinated rubber.

The composition, after thorough mixing of the ingredients, was allowed to stand for a time in order that bubbles might escape and any dirt or sediment settle. After this it was brushed on a wooden panel and found to give a hard, tough, clear, and bright coating when dry. The surface dried "dust free" in less than two hours.

The industrial application of chlorinated rubber has been demonstrated by research to have the following possibilities:

Varnishes and similar coatings having very good luster or flat, as may be desired, can be made. These varnishes or coatings are hard and durable, especially for indoor use. They resist acids, alcohol, water, fumes, fire, etc., and can be made very quick drying, being useful in certain industries where speed is required for drying, with or without heat.

Chlorinated rubber may be used in the textile trade for treating cloth in various kinds, such as waterproof and fire-resistant materials, including curtains, chintzes, chiffons, waterproof covers, window shades, etc.; in the paper trade for treating paper, paper boxes, and other containers; in the manufacture of molded or plastic compositions for making radio parts, electrical equipment parts, buttons, ornaments, toilet articles, toys, games, etc.; in the manufacture of laminated material made from sheets of paper, cloth, or other material. These products have fire-resistant and insulating characteristics as well as flexibility.

In the hat industry chlorinated rubber may be used as sizing for felt hats and as a coating for straw hats; in the artificial leather or patent leather industry, as a coating for leather or imitation leather; in the electrical equipment industry as an insulation material for coating copper and other wire and electrical equipment parts in the making of laminated boards and in the manufacture of molded parts manufactured from plastics containing chlor rubber, etc.; in the wallpaper and interior decoration industry, as a coating for wallpaper and for wall coverings, having quick-drying, acid, and fire-resistant qualities.

Patents

The following list of United States patents have been issued on chlorinated rubber:

U. S. Pat. No.	Issued	Title
1,544,529	June 30, 1925	"Process of Making Chlorinated Rubber"
1,544,530	June 30, 1925	"Process of Making Chlorinated Rubber and Products Derived Therefrom"
1,544,531	June 30, 1925	"Method of Chlorinating Rubber"
1,544,532	June 30, 1925	"Process of Making Chlorinated Rubber"
1,544,533	June 30, 1925	"Process of Treating Rubber"
1,544,534	June 30, 1925	"Chlorinated Rubber Product and Process of Making Same"
1,544,535	June 30, 1925	"Chlorinated Rubber Compound and Process of Making Same"
1,572,065	Feb. 9, 1926	"Resinous Composition Containing Chlorinated Rubber"
1,635,812	July 12, 1927	"Chlorinated - Rubber Varnish"
1,695,636	Dec. 18, 1928	"Chemical Product and Process of Making Same"
1,695,637	Dec. 18, 1928	"Cement"
1,695,638	Dec. 18, 1928	"Coating Composition and Process of Making Same"
1,695,639	Dec. 18, 1928	"Liquid Composition Containing Chorinated Rubber"
1,695,640	Dec. 18, 1928	"Chlorinated - Rubber Composition Containing Linseed Oil"
1,695,641	Dec. 18, 1928	"Stabilized Chlorinated Rubber"
1,695,642	Dec. 18, 1928	"Varnish"
1,695,643	Dec. 18, 1928	"Artificial Fiber and Process of Making Same"

[1] Data from Chadeloid Chemical Co., 75 E. 45th St., New York, N. Y.

Recovering Lead in Rubber Factory[1]

F. L. HAUSHALTER[2]

WHEN we say that lead melts at 621° F. and has a tensile strength of 1,900 pounds per square inch, we have in mind pure lead that has not been remelted many times in crucibles that are not always clean. This metal, too, as ordinarily used in pipes and conduits has been drawn; stresses have been set up in the lead by this process, and their magnitude depends upon several factors, such as temperature of extrusion, extent of oxidation, rate of cooling, and impurities accumulated in the remelting.

Where lead is melted and extruded onto wire and hose, the tensile strength of such lead, when removed from the wire or hose, has increased to about 2,400 pounds per square inch. The percentage elongation, however, has decreased from about 50 to about 25. Industries where lead is used again and again by remelting, as in the rubber industry, where hose is vulcanized in a lead casing, the casing removed after vulcanization of the hose, and remelted, the problem of controlling the physical properties of the lead becomes a serious one.

After pure lead has been extruded onto the hose and the tensile strength, thereby, stepped up to about 2,400 pounds per square inch, the tensile strength then falls appreciably below the original value of 1,900 pounds per square inch as soon as the vulcanization process begins, the temperature of vulcanization being 280° F. When samples of the lead, as stripped from the hose after vulcanization were tested for tensile strength at various temperatures, the curve approximated a straight line. A stress-strain curve on the

[1] *Chem. Met. Eng.*, Feb., 1930.
[2] Development Engineer, B. F. Goodrich Co.

lead at a temperature of 280° F. indicates that at a tensile stress of about 600 pounds per square inch the lead begins to yield, for the curve departs from the original slope.

The curve for dross lead, or removed scum, shows a straight line almost to the breaking point, which occurs at less than 700 pounds per square inch. The curve for refined dross—lead from which the scum has been removed by the ordinary process of ladling—shows good characteristics up to 900 pounds per square inch, and then fails at little more than 1,000 pounds per square inch. Pure lead, from the pig, follows the straight line up to about 700 pounds per square inch, then gradually departs from it, as one would expect. Samples removed from lead-covered hose before and after vulcanization indicated that the stresses have been somewhat relieved by the heat treatment, for the curve drops below that for pure pig lead, although the ultimate tensile strength is greater than that of the pure pig lead.

The following table indicates that the tensile values are practically the same:

	Tensile Strength-Lb. per Sq. In. at— 80° F.	280° F.
Pure lead, pig	1,880	1,239
Lead tube, before cure	1,930	1,345
Lead tube, after cure	2,390	1,385
Refined dross, ready for production	1,810	1,118
Dross	400	650

By setting up a daily control test on the tensile strength of the lead, a safe working stress of 600 pounds per square inch in the lead can be assumed. By using an internal pressure of 125 pounds per square inch on the hose and an external pressure of 35 pounds per square inch in the heater, the effective maximum pressure the lead must counteract is 65 pounds per square inch. Using the formula: $PD = 2tf$ where: P = effective pressure, pound per square inch; D = inside diameter of lead tubing; t = wall thickness, inches; f = 600 pounds per square inch working stress; a table of wall thicknesses for various hose diameters may be tabulated.

Rubber Division A. C. S.

New York Group

The final meeting of the New York Group of the Rubber Division, A. C. S., in the 1929-30 winter series was held on Thursday evening, May 22, in the Silver Grill of Hotel Lexington, Lexington Ave. and 48th St., New York, N. Y. Many favorable comments were made on the surroundings, menu, entertainment, and program of the meeting. Every feature was in fact a decided success. The attendance numbered about 125.

During the dinner many rustic musical favorites were rendered by "Jake's Hayseeders," a costumed orchestra hailing from the hills of Northern New Jersey led by Jake in person. Their songs and antics enlivened the occasion right merrily. This musical feature was donated for the occasion by the American Hard Rubber Co.

The gathering was further entertained before the reading of the papers by several amusing stories told in French-Canadian habitant dialect by Fred C. Batchellor, sales manager, General Atlas Carbon Co., New York, N. Y.

W. C. Geer, formerly vice president of The B. F. Goodrich Co., Akron, O., now of Ithaca, N. Y., gave an informal account of his studies on the elimination of ice from airplanes. An illustrated article descriptive of the practical means evolved from these studies was recently published in this journal.[1]

Mr. Geer illustrated his talk with a number of lantern slides and explained the importance of the elimination of the ice hazard from flying both on the score of safety and economy by the maintenance of schedules on air routes under ice forming conditions.

Abstracts of the other papers are:

[1] "Ice Hazard Past for Airplanes," India Rubber World, May 1, 1930, p. 70.

Rubber in the Grinding Wheel Industry. Joseph N. Kuzmick. This paper gives a brief resumé of the scope of rubber bonded grinding wheels and an outline of their composition and manufacture. The bulk of abrasives now used in manufacturing grinding wheels are crystalline alumina for metals of high tensile strength and silicon carbide for metals of low tensile strength. The high tensile strength of rubber bond compared to that of inorganic bonds permits use of peripheral speeds up to 3,000 meters (9,843 feet) per minute, as against 1,800 meters (5,906 feet) per minute for inorganic bonds, resulting in an enormous increase in cutting ability. Rubber bond abrasive wheel mixtures mixed on differential rolls are desirable where very fine finishes are required. When extremely fast cutting wheels are desired, a jel is formed from the rubber base stock, with a suitable solvent. The abrasive granules are then admixed in a dough mixer. This type gives a more porous wheel structure. Illustrated by lantern slides.

Hard Rubber and Its Unusual Applications. D. E. Jones. This paper comprised references to the variety of products made of hard rubber and to its physical properties. Its applications in the chemical industry are described, together with some special applications of soft rubber. Hard rubber products in general comprise sheets, rods, tubes, and molded articles. The manufacture and use of hard rubber dust is explained briefly. Hard rubber has been replaced by other materials in certain lines, such as storage battery cases, but in the chemical industry its use is increasing. The paper was illustrated by lantern slides.

Akron Rubber Group

The meeting of the Akron Group of the Rubber Division, A. C. S., held at the Akron City Club on the evening of May 12 was attended by about 275 persons. The papers read were of great practical interest and are outlined in the following abstracts that were submitted by the authors.

"Laboratory Evaluation of Flex Cracking Resistance." L. V. Cooper, Firestone Tire & Rubber Co. This paper presented data on flex cracking of different types of tread stocks. The machine used was the DeMattia, and a dumb-bell test piece stretched from 0 initial tension to 50-75 and 100 per cent final elongation.

"Modern Statistical Machinery Applied to Rubber Compounding." J. D. Morron, Mechanical Rubber Co., Cleveland, O. In this paper it was shown how it is possible by the use of a sorting machine to save considerable work in compounding. Where five hundred or more compound cards are to be classified, holes are punched in them in order that they may be classified according to any combination of characteristics, such as color, tensiles, percentage of stretch at break, hardness, etc. When a compound is to be used requiring certain characteristics, the sorting machine is set and the cards passed through it quickly, and all the compounds possessing the desired characteristics are sorted from those undesirable. A very enlightening as well as entertaining movie of the system in actual operation was presented.

"Quality Control in Tire Manufacture." Joseph Torrey, Jr., The Goodyear Tire & Rubber Co. This paper presented some of the problems encountered in organizing and operating an efficient and thorough inspection department.

"Airplane Tires and Wheels." Henry Schippel, The B. F. Goodrich Co. In this paper explanation was given of the mathematics involved in calculating the sizes of tires necessary for different types of airplanes. Slides were presented showing the wind resistance of various sized tires and types of running gear as well as the effects of toe-in angles and stream lining of tire equipment on wind resistance. Slides were also presented showing different planes equipped with various types of running gear.

"Cleaning Rubber by the Strainer Method." J. P. Maider, The Goodyear Tire & Rubber Co. This paper dealt with the relative merits of straining and washing rubber. It was illustrated by curves on which the relation of speed to horse power consumption and temperature of rubber were graphically shown.

"Field Application and Cure of Rubber Lining to Ball Mill." F. L. Haushalter, The B. F. Goodrich Co. This interesting paper explained how the company lined a large ball mill which was installed away from the Goodrich factory.

Chicago Group

The Chicago Group of the Rubber Division, A. C. S., held its last spring meeting on May 16 in the Rubber Group dining-room at Maillard's, Chicago, Ill. The subject for the evening was "Safety in the Rubber Industry," and the speaker was R. C. Salisbury, Manager of Safety and Health at the Cudahy plant of The Fisk Rubber Co.

Mr. Salisbury stressed the point that precautions are necessary not only to diminish accidents but to reduce compensation insurance and unjustifiable claims against the rubber industry. All of these objects are being increasingly attained.

His paper was illustrated with slides describing various safety devices on mills and calenders. It was brought up in the discussion that whenever a person is caught in the rolls of the mill or calender, it is better to separate the rolls than to reverse the machine. Accidents have been made worse by operators pushing the wrong button when it was intended to reverse the machine.

One of the slides showed an exhaust hood over a mixer that not only carried off the carbon black dust but also the paper bags. Thus, the floor around the machine was kept clean. Many of the slides showed safety kinks in various rubber factories.

The Executive Committee plans to send to group members a questionnaire suggesting subjects for future meetings and requesting members to contribute other suggestions and indicate their personal preferences. By this plan the committee hopes to provide programs of wide general interest.

Los Angeles Group

The Los Angeles Group, Rubber Division, A. C. S., held its eleventh dinner and meeting at the Pollyanna Tea Room, 2228 W. Seventh St., Los Angeles, Calif., on April 25, with a good attendance. R. R. Jones, of The Firestone Tire & Rubber Co., Akron, O., spoke on "Industrial Power," and H. R. Lamberth, of the Fluor Construction Co., Los Angeles, spoke on "Water Cooling." President F. W. Stavely appointed E. A. Wolf, P. W. Drew, and P. A. McAviney as a membership committee.

Rubber Bibliography

AGING OF RUBBER AND ITS RETARDATION BY THE SURFACE APPLICATION OF ANTI-OXYGENS. Diffusion Process. C. Moureu, C. Dufraisse, and P. Lotte, *Ind. Eng. Chem.*, May, 1930, pp. 549-51.

RESEARCH AND PRODUCTION OF THE RUBBER SERVICE LABORATORIES CO. R. L. Sibley, *Ind. Eng. Chem.*, May, 1930, pp. 552-54.

EVOLUTION OF HYDROGEN SULPHIDE FROM VULCANIZED RUBBER. E. Wolesensky, *Research Paper No.* 162, U. S. Bureau of Standards, Washington, D. C.

ANATOMY OF EUPHORBIA INTISY. C. F. Swingle, *J. Agr. Research*, Apr. 1, 1930, pp. 615-25.

CULTIVATION AND PREPARATION OF RUBBER IN THE UNITED STATES. D. Spence, *Ind. Eng. Chem.*, Apr., 1930, pp. 384-87.

CHEMISTRY IN THE TELEPHONE INDUSTRY. R. R. Williams, *Ind. Eng. Chem.*, Apr., 1930, pp. 316-22.

ADVANCES IN RUBBER FOR THE AUTOMOTIVE INDUSTRY. W. C. Keys, *Proc. Am. Soc. Testing Materials*, Mar. 19, 1930, 15 pp. (Preprint).

ELECTRICAL PREPARATION OF RAW RUBBER. M. Blaschke, *Chem. Rundschau*, 45, 67 (1930).

CONDITIONS AFFECTING THE VULCANIZATION OF RUBBER. III. Some Properties of Rubber Against Solvents. Y. Toyabe and K. Fukunaga, *J. Soc. Chem. Ind. (Japan)*, 1930, 33, pp. 7-9B. In English in *Rubber Chem. & Tech.*, Apr., 1930, pp. 242-44.

INDIA RUBBER. H. P. and W. H. Stevens, Reprinted from *Reports of the Progress of Applied Chemistry*. Vol. XIV, 1929, pp. 445-86.

RUBBER-FABRIC COMBINATIONS AS USED IN RUBBER FOOTWEAR. A. R. Davis, *Rubber Age (N. Y.)*, Apr. 25, 1930, p. 87-88.

RUBBER-TEXTILE SYMPOSIUM. Rubberizing Balloon Fabric, R. P. Dinsmore; Rubber-Pyroxylin Textile Combinations, K. E. Burgess; Technology of Rubber-Textile Combinations with Reference to Transmission Belting, W. L. Sturtevant and D. P. Weisberg; *Rubber Age (N. Y.)*, May 10, 1930, pp. 139-43.

TOXIC SUBSTANCES IN THE RUBBER INDUSTRY. Part X. Acetone. P. A. Davis, *Rubber Age (N. Y.)*, May 10, 1930, pp. 145-46.

RECENT RESEARCH ON CARBON BLACK. T. L. Garner, *India Rubber J.*, Apr. 26, 1930, pp. 597-98, 601.

ULTRA-ACCELERATORS. G. Dumonthier, *Rev. gén. caoutchouc*, Apr., 1930, pp. 3-4. Formulae.

COLORING RUBBER. Continuation. F. Jacobs, *Rev. gén. caoutchouc*, Apr., 1930, pp. 9-17. Illustrations.

TIRE MOLD. *Rev. gén. caoutchouc*, Apr., 1930, pp. 21-22. Illustrations.

POROSITY IN EBONITE. F. Bath, *Rev. gén. caoutchouc*, Apr., 1930, pp. 19-20.

ANTIMONY PENTASULPHIDE. E. Schurmann and W. Bohm, *Kautschuk*, Apr., 1930, pp. 70-73. (To be continued).

RUBBERIZED FABRICS. E. Wurm, *Kautschuk*, Apr., 1930, pp. 73-76.

LINOLEUM V. RUBBER FLOORING. W. Esch, *Gummi-Ztg.*, Apr. 4, 1930, pp. 1410-12.

GERMAN TIRES. *Gummi-Ztg.*, Apr. 4, 1930, pp. 1412-13.

VULCANIZATION OF TRANSPARENT ARTICLES. R. Ditmar, *Gummi-Ztg.*, Apr. 11, 1930, pp. 1452-54.

RUBBER BUDGET SYSTEM. K. Pieper, *Gummi-Ztg.*, Apr. 11, 1930, pp. 1454-56 and Apr. 18, 1930, pp. 1503-07.

MANUFACTURE OF TUBING. *Gummi-Ztg.*, Apr. 25, 1930, pp. 1550-54. Diagrams.

GOLDEN ANTIMONY SULPHIDE CONTROL PROCESSES. A. Chaybany, *Rev. gén. caoutchouc*, Feb.-Mar., 1930, pp. 31-32.

INSULATION TAPE. P. Werner, *Gummi-Ztg.*, May 2, 1930. Diagrams.

TITANIUM WHITE. G. Agamennone, *Giorn. chim. ind. applicata*, Mar., 1930, pp. 123-24.

MANUFACTURE OF INNER TUBES. R. Thiollet and G. Martin, *Caoutchouc & gutta-percha*, Apr. 15, 1930, pp. 14962-63.

COLD CURE. (Parkes Process). Extract of a study by P. Bourgois, *Caoutchouc & gutta-percha*, Apr. 15, 1930, pp. 14963-65.

STEAM AND HOT WATER ACCUMULATORS. M. Varinos, *Caoutchouc & gutta-percha*, Apr. 15, 1930, pp. 14970-74.

HEVEA MILDEW. J. C. s'Jacob. *Arch. Rubbercultuur*, Apr., 1930, pp. 171-83 Bibliography. Diagrams. English summary, pp. 184-85.

EXPERIMENTS WITH HEVEA BUDDINGS. J. F. Schmole and B. Prummel, *Arch. Rubbercultuur*, Apr., 1930, pp. 186-93. Tables. Graphs. English version, pp. 194-99.

WINTERING OF HEVEA. H. S. Vollema, *Arch. Rubbercultuur*, Apr., 1930, pp. 200-11. Tables. English summary, pp. 212-13.

PRACTICE AND EXPERIMENT STATION. O. de Vries. *Indische Mercuur*, Apr. 30, 1930, pp. 356-59.

ANTIOXIDANTS. W. J. S. Naunton, *Inst. Rubber Ind.*, Feb., 1930, pp. 317-27.

RECLAIMED RUBBER SYMPOSIUM. Manufacture of Reclaimed Rubber, R. F. Pearson; Testing of Reclaimed Rubber, W. E. Stafford; Reclaims from the Rubber Manufacturer's Standpoint, E. H. Hurleston; Comparison of the Pigment Reenforcement of Crude and Reclaimed Rubber, J. Stopforth; *Inst. Rubber Ind.*, Feb., 1930, pp. 336-61.

APPLICATION AND ANALYSIS OF LATEX. W. H. Stevens, *Inst. Rubber Ind.*, Feb., 1930, pp. 362-74.

OUTLINE OF TENTATIVE STANDARD LABORATORY PROCEDURE FOR THE PREPARATION AND PHYSICAL TESTING OF RUBBER SAMPLES. Report of Physical Testing Committee, Rubber Division, A. C. S., *Rubber Chem. & Tech.*, Apr., 1930, pp. 179-84.

CHEMICAL ADSORPTION STUDIES OF RUBBER FILLERS AND RUBBER COMPOUNDS. Communication No. 1. G. Fromandi, *Rubber Chem. & Tech.*, Apr., 1930, pp. 229-34.

FORMATION OF THIN FILMS OF ORGANIC COLLOIDS ON MERCURY SURFACES. R. L. Keenan, *Rubber Chem. & Tech.*, Apr., 1930, pp. 245-53.

TESTING AUTOMOTIVE PARTS ASSEMBLED UNDER COMPRESSION. Part I. Deflection under Compression; Part II. Compression-Set and Some Special Tests. F. D. Abbott, *Ind. Eng. Chem.*, Analy. Ed., Apr. 15, 1930, pp. 145-59. Illustrated.

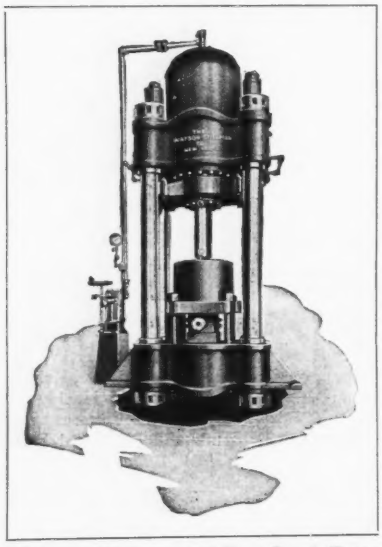
Parmr

Parmr is the trade designation of a mineral rubber especially designed to meet present-day requirements of the rubber industry, with particular attention given to its mixing properties. Parmr is a standard blown bitumen residue which is adapted for all types of cures. Grade No. 1 has a melting point of 290° to 310° F. Grade No. 2 is characterized by somewhat greater hardness and a melting point definitely above 300° F.

New Machines and Appliances

Lead Covering Press

LEAD covering presses are of interest in the cable insulation and the mechanical branches of the rubber industry: in the former for applying the finishing



Watson-Stillman 2,100-Ton Lead Press

sheath for certain types of cables, and in the latter for encasing hose for vulcanization under internal pressure. The illustration represents a standard 2,100-ton lead press with lead cylinder, plunger, lead die block, and operating valve. This press is designed and built to reduce the upkeep charges to a minimum.

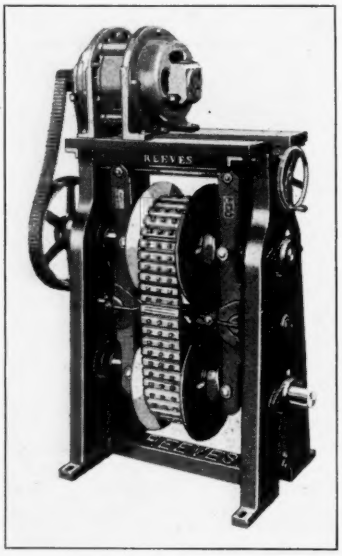
The cylinders, stationary platens, moving platens, and other castings subjected to severe stresses are of annealed open hearth steel. Hydraulic rams are of chilled cast iron ground to perfect finish. Cylinders are copper lined, but the rams do not touch the cylinders at any point. Pullback is effected by individual machinery steel cylinders fitted with seamless brass liners. The rams of these cylinders are attached directly to the moving platens of the presses. Main tie rods are of steel forgings finished all over. All packings subject to wear are easily renewable without removing any rams from their cylinders, or involving any serious overhauling work, and without disturbing the adjustment of the lead container and plunger.

With the type of block used it is not necessary to remove it from the press to change lead tube sizes within the range of the block in service. The nipples and dies are removable through the opening at the front of the block after the front adjusting screw has been removed. Nipples and dies of other sizes can be inserted to replace those removed and the other parts replaced, all of which is accomplished without disturbing the adjustment of the lead container or plunger and without removing any of these heavy parts from the press.

In addition to the usual adjustment for thickness of lead, externally operated lateral adjustment of the dies relative to the nipples is provided by four adjusting screws shown on the sides of the block. Uniformity of lead wall thickness can thus be obtained without depending upon variations in temperature in the block. The die blocks are made of best obtainable heat treated alloy steel forgings. The Watson-Stillman Co., 50 Church St., New York, N. Y.

Variable Speed Transmission

IN ESSENTIALLY every industrial center variable speed transmission is an acknowledged necessity in machine opera-



Reeves Vertical Type Transmission

tion. One of the familiar means for giving visible speeds is of the type represented in the accompanying illustration. In this instance the vertical rather than the horizontal form is shown. The horizontal form of transmission is more commonly seen in rubber plants than the vertical one. However, the latter is especially useful where space or other conditions make that form desirable. In fact the vertical type was designed for use where conservation of horizontal space on floor or in machine is necessary.

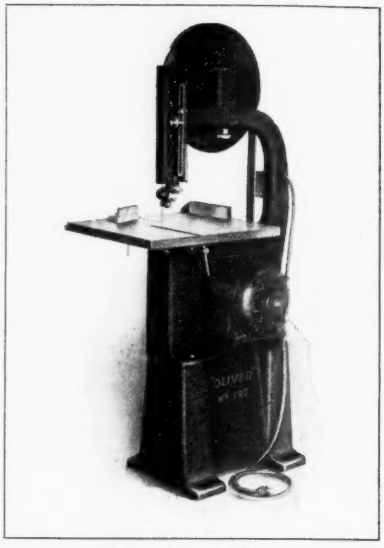
The picture illustrates a transmission with a motor base on its top. When desired, this type is made completely enclosed as protection against dust. Various combinations can be made with the standard transmission units, such as the vertical type with motor base and countershaft, the individual motor unit with countershaft, electrical remote control. Reeves Pulley Co., Columbus, Ind.

Band Sawing Machine

A BAND sawing machine is naturally thought of as a woodworking tool and as equipment for a carpenter or pattern shop. Yet a machine of that sort is very useful for cutting vulcanized stock as in cutting tiles from slabs or bevel edged eraser rubbers from press cured sheets.

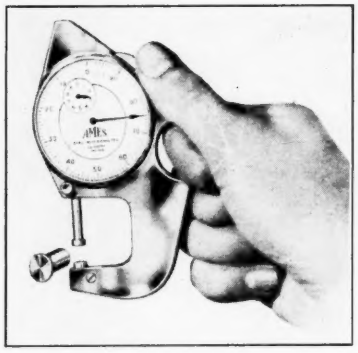
The band saw machine here illustrated is a self-contained portable machine fitted with motor-on-shaft, cord and switch ready for use. A special feature of the machine is its exceptionally large cast-iron table with miter cross-cut gage and parallel ripping fence, which decidedly increases the usefulness of the machine. The capacity of the machine is 18 inches between the saw and the column, 8 inches high under the guide. One can use saws up to ½-inch in width, and by using gages will rip up to 11 inches wide and cross-cut and miter up to 8 inches. The table tilts 45 degrees to the right and is unusually large for a portable band saw.

Suitable guides, gages, safety guards, and adjustments are provided. The latter are all controlled by hand wheels. All the bearings of the machine are of the highest



Oliver Band Saw

grade, are dirt and dust proof, and have pressure grease lubrication needing attention only twice a year. Oliver Machinery Co., Grand Rapids, Mich.



Ames Micrometer

Dial Micrometer

ONE of the most useful handy, vest-pocket tools for the calender man, tire and shoe designer, specification man, and cost estimator, is the dial micrometer gage here pictured. It is of strong rugged construction, yet is extremely sensitive. The instrument is speedier to use and easier to read than an ordinary micrometer.

The measuring faces are readily separated by a quick acting spindle lifted by a simple upward movement of the thumb. The micrometer closes itself into position on the work to be measured, and the reading is indicated instantly on the face of the dial where thousandths of an inch are greatly magnified by widely spaced graduations. The reading can be locked in position by a simple snap and the tool be used as a snap gage. It measures round, flat, and odd shaped parts within its 1-inch range. B. C. Ames, Waltham, Mass.

Rubber Test Bench Marker

BEFORE making a tensile test on a dumbbell form rubber sample, a pair of reference marks are placed on the central portion of the test strip, serving as bench marks for the measurement of the elongation. A standard means for making such marks suggested by the Physical Testing Committee, Division of Rubber Chemistry, A. C. S.,[1] is here pictured. It is a small tool consisting of a small block provided on one side with parallel, beveled marking edges and on the opposite side with a handle. The edges are inked on an ordinary inking pad and applied to the test sample where they imprint the desired bench marks with accuracy. Every test piece may by this means be marked for test without error. Henry L. Scott Co., Providence, R. I.

Bench Marker

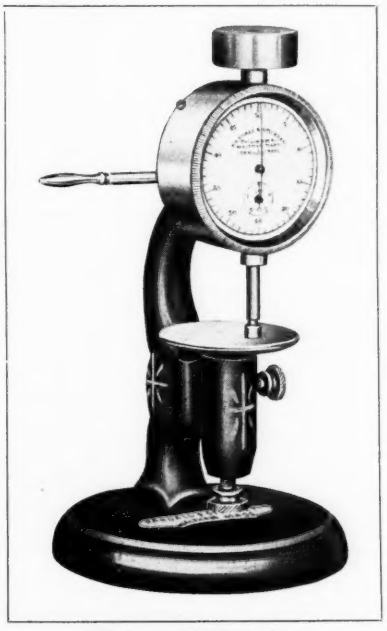
[1] INDIA RUBBER WORLD, Feb. 1, 1930, pp. 71-72.

Standard Thickness Gage

MEASUREMENTS of thickness of soft rubber can be duplicated to 0.001-inch only with an instrument that operates by a standard pressure on a standard area. This fact is recognized in the tentative laboratory procedure outlined by the Physical Testing Committee, Rubber Division, A. C. S.[1]

The instruction of this committee on the measurement of the thickness of test pieces specifies that the diameter of the presser foot of the gage shall be 0.25-inch and that it shall be actuated by a dead weight of 3 ounces. These standard conditions are found in the micrometer dial gage pictured in the illustration.

With this gage the thickness of rubber can be read on the dial within 0.001-inch.



Efficiency Rubber Gage

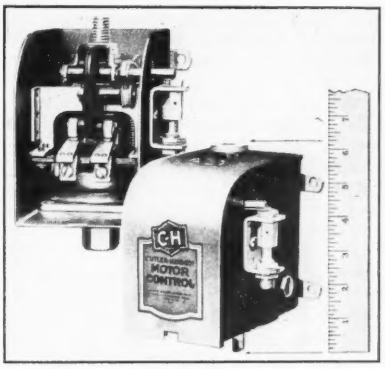
There is no personal factor to be considered because the compressive force excited on the presser foot of the gage is constant since it is applied by the 3-ounce weight shown surmounting the presser foot spindle. Frank E. Randall, Waltham, Mass.

[1] INDIA RUBBER WORLD, Feb. 1, 1930, pp. 71-72.

A New Small Pressure Regulator

THE new single pole pressure regulator, exceptionally small in size, here pictured, can be used as a starting switch for motors up to one h.p., 230 volts, A.C. or D.C., or as a pilot switch in the control circuit of automatic starters for larger motors. The regulator closes the circuit at low pressure and opens the circuit at high pressure and can be adjusted to open the circuit at any pressure from 30 to 200 pounds.

Applications of this device range over a wide field and it can be used for maintaining pressure on systems containing water, air, gas, and other similar fluids. For air compressor service, a small unloader device at the side of the case removes back pressure.



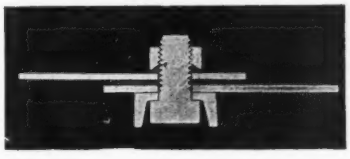
C-H Regulator—Open and Closed

The enclosing case is black japanned and metal working parts are cadmium plated to withstand moist atmospheres. Double-break silver contacts prevent pitting and insure good contact. The diaphragm is of rubber. Conduit knockout-holes in the case facilitate wiring. Cutler-Hammer, Inc., Milwaukee, Wis.

Nut and Bolt for Tanks

JOINT leakage in tanks is readily overcome and prevented by a special bolt and nut operated in connection with a rubber gasket as indicated in the illustration. This shows a bolted tank joint in section rendered non-leaking by the simple device of a recessed nut in which a small rubber gasket fits. When this is applied to bolted steel tanks, all leakage and seepage completely is eliminated.

In making up tank joints with the recessed nut the packing may be punched by machinery, making a clean hole for passage of the bolts. The gasket is then placed over the bolt and is compressed into the recess as the nut is tightened, making an absolutely liquid-proof joint.



Tank Joint with Recessed Nut

Formerly it was the practice to drive the bolts through the packing and to depend upon the ragged edges of the packing crowding itself around the bolt to make it leak-proof. The new recessed nuts are furnished either square or hexagonal and are no more expensive than standard nuts. Further particulars may be obtained from the Columbian Steel Tank Co., Kansas City, Mo.

Unique Tire Valve Insides

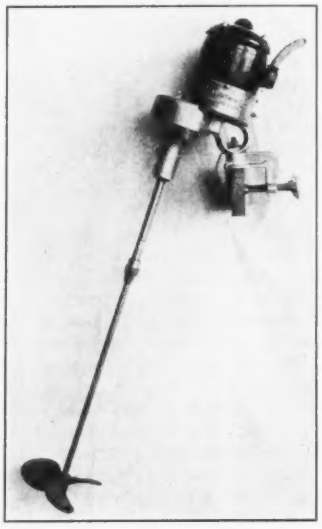
A NEW construction of tire valve insides has been perfected. Its rubber parts comprise a collar and a rubber valve seat. Neither of these rubber parts are

molded, but each is cut from live rubber. The rubber collar is cut and pierced from tubing, and the rubber valve seat is accurately cut and pierced from equally high quality stock. Thus a perfectly fitting valve seat is achieved, providing a sensitive and lasting seal against escaping air.

For the first time in tire valves a high grade of phosphor bronze has been used in the spring. It is at once highly sensitive and is not affected by abnormal conditions of temperature or moisture. The coiled plug as an actual part of the spring prevents sticking in the valve or its detachment in service. Peck Spring Co., Plainville, Conn.

Portable Geared Mixer

THE illustration represents a portable electric geared mixer that can be clamped to a barrel, tank, or similar container for stirring and mixing the contents. This handy mixer has found application in the laboratories and plants of several rubber companies. The device has many practical advantages. The clamp is universally adjustable; this permits placing the mixing shaft and propeller in any position desired. The proper position to keep solids in uniform suspension is to place the shaft in the mix at an angle of 20° about half way between the center and the side of the container to the right. In this position the propellers give a downward thrust and impinge the mix against the bottom. Thus they coact with the bottom and sides of the container and turn the fluid from bottom to top continuously and give it a slight swirl at the same time.



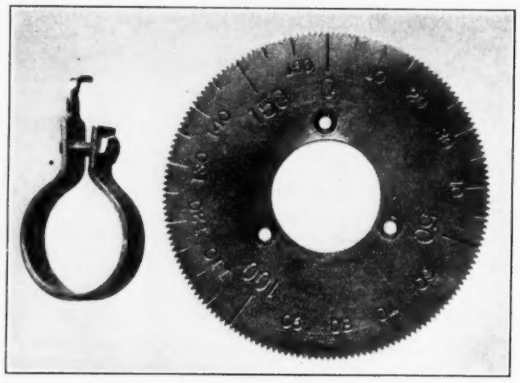
"Lightnin" Portable Mixer

The mixer is ball bearing throughout. The shaft is telescopically adjustable in length to suit the depth of the containing vessel. The machine is furnished in any desired voltage, phase, or cycle for operation from the lighting circuit.

The shafts are made of any required material. Mixing Equipment Co., Inc., 229 E. 38th St., New York, N. Y.

Laboratory Mill Screw Dial

IN standardizing rubber test laboratories[1] the Physical Testing Committee, Division of Rubber Chemistry, A. C. S., specifies a mill screw dial gage of special graduation to permit mixings to be made at the specified roll spacings prescribed for batches of different volumes. A dial for this purpose is here pictured with the index clamp for the mill screw.



Dial for Laboratory Mills

The dial is 4½ inches diameter provided with a central opening to permit passage of the mill screw. Two of these dials are required, one for each screw housing. The gage is completed by securing to each screw a clamp with index pointer.

The dial has 166 graduations on its circumference indicating that number of thousandths of an inch for a single full turn of the screw, which has six threads per inch. Henry L. Scott Co., Providence, R. I.

[1] India Rubber World, May 1, 1930, pp. 73-74.

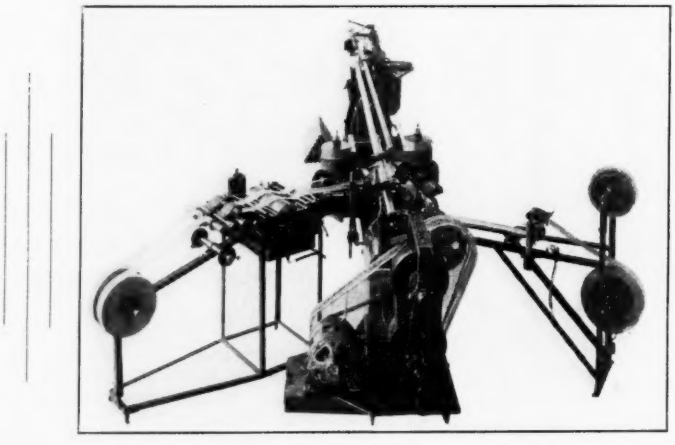
Paper Tube Making Machine

SPIRAL wound paper tubes and cans, especially the former, are used extensively for packaging certain manufactured rubber products. For example, tubes are adapted for winding up light-weight sheet rubber and rubberized or proofed fabrics which require to be kept smooth and unfolded for shipment. They are also used as centers upon which to roll up friction and insulation tape stock that is afterward cut into rolls of desired width. Spiral wound paper cans and the lap rolled variety as well are useful shipping containers for many small molded specialties, repair kits comprising tubed rubber cement, patching, etc.

The illustration pictures a machine designed for winding paper tubes for these and similar purposes. It represents the latest development in tube winding machinery. Ordinary tubes are produced at the rate of 60 to 90 linear feet per minute. The machine is equipped with an electric preheater for drying the first ply of paper. The drive is through mechanical, variable speed transmission, or by variable speed motor if with direct current.

A side loading glue stand permits quick loading of stock rolls and increases the production time of the machine. The coil of board stock is put on the outer holder and when run down to small size, is moved to the inner stub roller, giving the operator time to put a new coil in position ready to lead the strip quickly into the mandrel when the old coil is run out.

An independent cut off allows adjusting a proper distance from the winding end for the tube to dry before cutting off and permits high speed operation. This cutting off mechanism is a complete and independent unit of sturdy construction. It is quickly adjusted for different lengths of tubes and gives closer tube lengths. The tube, being supported on the inside at the point of cutting, is then cut with clean edges. M. D. Knowlton Co., Rochester, N. Y.



Knowlton Spiral Tube Winder and Cutter

Editor's Book Table

New Publications

"The Technical Department of the New Jersey Zinc Co." New Jersey Zinc Co., 160 Front St., New York, N. Y., has prepared a 65-page booklet to show the sort of work which makes up the daily life of the employes of the technical department. The booklet is very thoroughly illustrated with photographs of laboratories and apparatus used in the various branches of the work and describes briefly the objectives of each of the company's divisions, subdivisions, and sections.

"National Rubber Machinery Review, Bulletin No. 5-30." This publication is a revelation of the variety and completeness of the rubber working machinery manufactured by the National Rubber Machinery Co., Akron, O. Much of the machinery described is designed for the manufacture of tires although laboratory experimental mixing machinery, cement mixers, presses, and other mechanisms are included.

"The Black Art of Rubber Compounding, Chat No. 16" is the latest issue in this practical series for compounders from the laboratories of Binney & Smith Co., 41 E. 42nd St., New York, N. Y. It is devoted to a discussion of the physical properties and characteristics of a new mineral rubber known as "Parmr." Test formulae are given, and results of tests of both grades of "Parmr" are analyzed.

"Catalog No. 30." Super Mold Corp., Lodi, Calif. A loose leaf bulletin with illustrations and descriptions of Supertreaders of different models and capacities. Pictures are shown of Supertreader matrix and spacer ring equipment, and the exclusive features of the company's machines are detailed.

"Velvetex," an eight-page pamphlet issued by Binney & Smith Co., 41 E. 42nd St., New York, N. Y., gives pertinent facts relating to this softest form of carbon black and its value in rubber goods. It also contains a nomographic chart for ascertaining equivalent cures and a temperature conversion chart showing corresponding values of Centigrade and Fahrenheit degrees of heat.

"Fisk and the Independent Merchant." The Fisk Rubber Co., Chicopee Falls, Mass. A brief booklet bound in boards in which is outlined the policy of retailing Fisk tires through selected independent tire merchants.

"A Review of 1929 Witco Advertising" is a twenty-page booklet containing in colors reproductions of the advertisements of Wishnick-Tumpeer, Inc., 251 Front St., New York, N. Y.

"Vultex" is the title of an eight-page pamphlet issued by Vultex Chemical Co., Cambridge, Mass., which contains a description of the sources, uses, and many developments of vulcanized latex. The many experimental studies in the industrial application of latex bid fair to add new fields for the consumption of rubber in latex form.

"1930 Year Book." This annual of the Tire & Rim Association comprises 128 pages of complete official engineering data on tire rims for every type of rubber tire. The book is thumb indexed for quick reference to the contents under any of the following divisions: standard rim contours, loads and inflations, valves, passenger car tires, truck and bus tires, airplane tires, motorcycle tires, solid tires, and the appendix. The latter embraces information on the above topics furnished by European companies and contains the latest data available.

"Palmer-Bee Overhead and Other Conveyers." Catalog No. 52, Palmer-Bee Co., Detroit, Mich. This eighty-page book illustrates in detail the construction and application of the overhead system of conveyer as applied by this engineering company for handling the parts and facilitating the production of automobiles, tires, and other articles turned out by modern mass production methods.

Book Reviews

"Bibliography on Rubber Technology, 1924-1925. Section I, Latex and Raw Rubber." Compiled by Edith L. Shearer for the Technical-Commercial Group Special Libraries Association. 1930. Multigraphed pamphlet, 14 pages, 8½ by 11 inches.

This publication is Section I completing, with former issues, a volume of bibliography on rubber technology, the earlier parts of which from 2 to 7 inclusive were issued in 1926. This section covers the literature on latex and raw rubber for 1924 and 1925, both papers and patents. Copies of this list can be obtained by addressing E. L. Shearer, Room 2008, 195 Broadway, New York, N. Y.

"Annuaire Technique du Caoutchouc, de la Gutta Percha, et des Industries qui s'y Rattachent." Published by A. D. Cillard, 49 Rue des Vinaigriers, Paris, France.

This new volume of the "Encyclopedia du Caoutchouc et des Matieres Plastiques" ("Encyclopedia of Rubber and of Plastic Materials") comprises addresses of those concerns connected with the rubber and plastic industries, distributed under 400 different heads. Manufacturers' lists, which are separately classified, comprise not only France but Germany, Belgium, Spain, Italy, Great Britain, Canada, the United States, and most of the other foreign countries. There is also a list of nearly 900 technical products with their compositions, properties, and principal uses.

Legal

Adjudicated Patents

VULCANIZING RUBBER. Marion M. Harrison and Harold A. Morton vs. Sidney M. Cadwell.

The Court of Customs and Patent Appeals has upheld the Board of Appeals of the Patent Office in ruling that priority of an invention of a process for vulcanizing rubber involving the use of high power accelerators should be awarded to Sidney M. Cadwell over Marion M. Harrison and Harold A. Morton, whose assignee is the owner of patents No. 1,434,892 and No. 1,434,908 for the process.

The opinion of Judge Bland is summarized as follows:

The opinion describes the steps that have been taken in the art of vulcanizing rubber. Problems arising in the use of high power accelerators were solved by both parties, it is stated. The sole issue between the parties on appeal was which had first reduced the invention to practice.

The court held that the numerous laboratory tests conducted by the appellee in the usual way for determining proper vulcanizations, which tests were in common use in the rubber laboratories of the country, constituted a sufficient reduction to practice although no factory tests were made nor commercial operations conducted.

Treasury Decisions

BALLS. No. 11,779. Protest 307,686—G of R. H. Macy & Co. (New York). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1,414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1,402.

Opinion by J. Sullivan. In accordance with stipulation of counsel and on the authority of United States *v.* Woolworth (16 Ct. Cust. Appls. 421, T. D. 43,136) the balls were held dutiable at 30 per cent under paragraph 1,402. *Treasury Decisions*, Vol. 57, No. 18, p. 31.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
1274	Where can Bentonite be obtained.
1275	Manufacturer of ball machines.
1276	Maker of Hoods Silencer.
1277	Source of supply of rubber latex.
1278	Manufacturer of golf-ball thread cut from old inner tubes.
1279	Manufacturer of special novelty golf ball, "Mutt and Jeff."

Financial and Corporate News

Goodrich Annual and Special Meetings

At the annual meeting of The B. F. Goodrich Co., New York, N. Y., held May 7, the stockholders voted to retire 11,880 shares of preferred stock in accordance with the charter provisions.

At the directors' meeting the officers of the company were reelected, and in addition J. H. Connors, general manager of the mechanical division, and Arthur B. Newhall, general manager of the footwear division, were elected vice presidents.

Directors that were reelected are: Waddill Catchings, J. D. Tew, T. G. Graham, and George M. Moffett. Officers reelected by directors are: D. M. Goodrich, chairman; C. B. Raymond, vice chairman and vice president; J. D. Tew, president; T. G. Graham, first vice president and general manager of the tire division; S. M. Jett, secretary; V. I. Montenyohl, treasurer; T. B. Tomkinson, comptroller; A. D. Moss, director of purchases; J. L. McKnight, assistant secretary; L. L. Smith, assistant treasurer; W. M. Bechler and H. V. Gaertner, assistant comptrollers.

The regular common dividend payable on June 1, 1930, was declared.

At a special meeting of the Goodrich stockholders held on May 12, followed by a meeting of the directors, the issue of $30,000,000 of 15-year 6 per cent gold debentures was authorized, and the increase of the common stock of the company from 1,500,000 shares to 4,000,000 shares was approved.

U. S. Rubber Co.

A new issue of $15,000,000 United States Rubber Co. 6 per cent secured notes, due on June 1, 1933, were offered last month by Kuhn, Loeb & Co., at 99, to yield 6⅛ per cent. The proceeds will be applied toward the payment of $18,335,000 of 7½ per cent notes which will mature on August 1, next, thus effecting a saving in interest of about $475,200 annually.

Current assets of the company and its subsidiaries, as of December 31 last, adjusted to give effect to this financing, amounted to $113,174,338, or about six times current liabilities which, similarly adjusted, amounted to $18,967,973, making current assets equivalent to more than 97 per cent of the funded debt outstanding on completion of this financing. Inventories, including crude rubber, were carried at cost or market, whichever was lower.

United Carbon Co.

United Carbon Co. reports for quarter ended March 31, 1930, net profit of $263,300 after depreciation, depletion, and federal taxes, equivalent under the participating provision of the shares, to $3.82 a share on 21,069 shares (par $100) of participating preferred stock outstanding at end of quarter and 46 cents a share on 393,073 no-par shares of common stock.

New England Export Conference

Merchandising, rather than technical aspects of foreign trade, from the standpoint of the New England manufacturer, was emphasized on April 14 at the Hotel Statler, Boston, Mass., at the first New England export conference, sponsored by the New England Council and more than 25 organizations of leading business men.

A feature of the meeting was a three-act play in which the foreign selling methods of certain New England concerns were portrayed.

There were also exhibits of successful foreign merchandising campaigns by the following: Firestone Footwear Co., Hood Rubber Co., and United States Rubber Co.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rubber Co.	Pfd.	$3.00 s a.	June 16	June 2
Boston Woven Hose & Rubber Co.	Com.	$1.50 q.	June 16	June 2
Faultless Rubber Co.	Com.	$0.62½ q.	July 1	June 16
Firestone Tire & Rubber Co.	6% Pfd.	$1.50 q.	June 1	May 15
B. F. Goodrich Co.	Pfd.	$1.75 q.	July 1	June 14
B. F. Goodrich Co.	Com.	$1.00 q.	June 2	May 19
Goodyear Tire & Rubber Co.	Pfd.	$1.75 q.	July 1	May 31
Goodyear Tire & Rubber Co.	Com.	$1.25 q.	Aug. 1	July 1
I. B. Kleinert Rubber Co.	Com.	$0.62½ q.	June 1	May 15
Raybestos-Manhattan, Inc.	Com.	$0.65 q.	June 16	May 31

Financial Position of the Seven Principal Rubber Companies

As of December 31, 1929 unless otherwise noted	Goodyear	U. S. Rubber	Goodrich	Firestone (Oct. 31, 1929)	Fisk	General (Nov. 30, 1929)	Kelly Springfield
Net sales 1929	$256,227,067	$192,962,040	$164,494,957‡	$144,585,804	$52,790,476	$27,200,000**	§§
Increase over 1924	84%	12%	50%	69%	0	97%	§§
Funded debt*	83,749,271	81,236,400	33,772,702	22,758,200	17,414,500	0	0
Preferred stock	79,618,700	65,109,100	32,720,000	60,000,000	20,421,100	3,343,400	$8,214,700
Number common shares	1,398,139	1,464,371	1,053,638	2,239,860	1,705,037	83,599	1,063,840
Present market for common	83	28	40	23	4	145	4
Market valuation of common	116,045,537	41,002,388	42,145,520	51,516,780	6,820,148	12,121,855	4,255,360
Par value of prior obligations	163,367,971	146,345,500	66,492,702	82,758,200	37,835,600	3,343,400	8,214,700
Total market valuation	$279,413,508	$187,347,888	$108,638,222	$134,274,980	$44,655,748	$15,465,255	$12,470,060
Per cent represented by common	41.5%	21.9%	38.8%	38.3%	15.3%	78.5%	34.1%
Earned per common share on basis of capitalization as of latest year-end							
1928	$5.54	nil	$1.16	$2.45‡‡ $1.55§	nil	$19.01	nil
1929	9.33	nil	4.89‡	3.27‡‡ 1.84§	nil	15.99	nil
Earned on present total market valuation†							
1928	6.6%	nil	5.5%	6.1%	nil	11.6%	nil
1929	8.3%	1.4††	9.6%‡	6.6%	nil	9.9%	nil
Current assets	$131,455,470	$116,752,338	$90,524,123	$88,455,267	$25,205,516	$10,333,781	$12,257,444
Current liabilities	15,541,807	37,303,973	31,239,853	8,537,157	2,394,962	3,114,724	756,911
Working capital	115,913,673	79,448,365	59,284,270	79,918,110	22,810,554	7,219,057	11,500,532
Working capital per dollar of sales	$ .45	$ .41	$ .36	$ .55	$ .43	$ .27	§§
Inventories	66,111,896	57,499,934	46,284,915	41,228,632	14,457,457	5,323,227	6,797,241
Inventories per dollar of sales	$ .26	$ .30	$ .28	$ .29	$ .27	$ .20	§§
Net tangible assets per common share	$36	$32	$55	$30	$5	$145	$10

* Including funded debt and preferred stocks of subsidiaries.
** Gross sales.
† Taking bonds and preferred stocks at par, common at market prices.
†† After deduction of $2,464,000 extraordinary expense.
‡ Sales and profits of Hood Rubber Co., Inc., are included only since August 30, 1929, the date of acquisition.
‡‡ After actual preferred dividend payments.
§ Deducting a full year's dividend requirement on new preferred which resulted in $40,000,000 addition to capital investment.
§§ Not available.

Statistical Department of Otis & Co., Cleveland, O.

The Rubber Industry in America

OHIO

The Philadelphia Rubber Works Co., Akron, O., according to H. G. Day, president, has announced the acquisition of the reclaiming plant of the Miller Rubber Co. This gives an increased production capacity of 10 per cent, which is not required at present. The Philadelphia Rubber Works Co., however, expects to operate the plant when conditions are more nearly normal.

"The Akron" is the name to be given the dirigible now under construction for the United States Navy by the Goodyear-Zeppelin Corp., Akron, O.

The Textileather Corp. has moved its offices and production facilities from Newark, N. J., to Toledo, O., where a model plant for the coated fabrics' division has been equipped in every way for producing pyroxylin and rubber coated fabrics. The Newark plant has been discontinued. The company plans to introduce soon new rubber coated fabrics, representing, it declares, radical developments in that type of material. This new fabric will be sold through the Automotive Materials Corp., Detroit, Mich.

Melflex Products Co., 1833 E. Market St., Akron, O., makes Melflex rubber mats and treads designed to prevent slipping in busses, street cars, elevators, shower baths, swimming pools, and wherever foot safety is desired. T. W. Mell is president, and L. E. Warford, vice president of the company.

The Skinner-Goodwin Boot & Rubber Co., Dayton, O., manufactures mechanical rubber goods as well as boots and reliners. J. C. Skinner and W. G. Goodwin are the principal owners.

The Rubber Service Laboratories, Akron, O., and Nitro, W. Va., a division of Monsanto Chemical Works, St. Louis, Mo., has made some changes among its representatives. W. A. Moore, formerly central representative, has been assigned to the western territory to fill the place of E. R. Waite, who resigned on May 1 to become plant superintendent of the Sheller Mfg. Co., Portland, Ind. Mr. Moore received the degrees of A. B. and M. A. from Cornell College. For five years he was an instructor of chemistry at the University of Akron. Then he worked for The B. F. Goodrich Co. for two years. He has been with the Rubber Service Laboratories for over four years.

The company on May 1 assigned C. O. Wheeler, for more than three years in its employ, to the northeastern Ohio territory. He has had considerable experience in rubber laboratory and plant production, having been formerly with The Goodyear Tire & Rubber Co.

The Dayton Rubber Mfg. Co., Dayton, O., has announced the appointment of R. L. Wetzel as sales promotion and advertising manager to succeed Edwin

R. L. Wetzel

B. Self, who resigned after ten years with the company to establish his own business in Chicago, Ill. Mr. Wetzel has been with Dayton five years, for three as assistant to Mr. Self and for the past two as assistant to D. W. Warden, vice president in charge of merchandising. Mr. Self will operate as Edwin B. Self, Inc., and will offer a specialized sales promotion service.

Organizer of Akron Chemical Co.

J. R. Silver, Jr., who resigned last September from The B. F. Goodrich Co., Akron, O., after eleven years' service, recently organized the Akron Chemical Co., acting as a technical sales agent for eastern manufacturers.

Mr. Silver was graduated from Penn State in 1914 and until 1917 was engaged in the construction and the operation of a munition plant. After serving as a captain in the Chemical Warfare Service during the war, he joined the Goodrich company as manager of Mill No. 3. In this capacity he had charge of the manufacture and the sale of "rubber chemicals." He was subsequently superintendent of the hard rubber division and manager of the mechanical sales development division.

Akron Chemical Co. has offices at 604 Metropolitan Bldg., Akron, and is representing in Ohio the American Cyanamid Co., Calco Chemical Co., and J. M. Huber, Inc.

Goodrich Activities

Thirty-three European industrial leaders, including two women, inspected the plant of The B. F. Goodrich Rubber Co., Akron, O., on April 29. The party is touring America, visiting prominent manufacturers, and studying manufacturing and production methods. At the luncheon, James D. Tew, Goodrich president, in his address stated that the entire Goodrich plant was open to the inspection of his foreign guests, and that he hoped much good would result from an exchange of knowledge between American and European manufacturers. The visitors declared that they were particularly impressed with the giant conveyer systems at Goodrich, the automatic machinery, and the production speed maintained.

Norman H. Keeling, 627 W. Market St., Akron, has been promoted to advertising manager of the Miller Rubber Products Co., now a Goodrich subsidiary. He is a graduate of West High School and has been very successful in field merchandising activities, being at various times salesman, branch manager, and retail store zone manager.

Guy Blanchard, whom Mr. Keeling succeeds, has joined the advertising staff of the Goodrich company and will have charge of institutional publications.

Goodyear Operations

The Goodyear Tire & Rubber Co., Inc., Akron, O., under the laws of Ohio has incorporated another subsidiary, the Goodyear Tire & Rubber Co. of Argentine. Its purpose is to acquire a site for a tire and rubber factory in Argentine, but the erection of a plant is not contemplated at present.

President Litchfield stated that if Goodyear decides to build in Argentine, production will be for that country alone, and other South American countries would be supplied by the United States plants.

Capitalization of the new subsidiary was $600,000. Its officers are the same as those of the parent company.

E. G. Holt, chief of the Rubber Division of the United States Department of Commerce, Washington, D. C., recently resigned to accept the position of manager of the foreign and crude rubber research division of the Goodyear company. Mr. Holt has already assumed his new duties in Akron. He was born in Clinton, Me., in 1894 and is a graduate of Colby and George Washington Universities. Before he became connected with the Department of Commerce in 1921, he served successively as clerk, examiner, and assistant chief examiner for the civil service commission.

More than a million tires have been manufactured at the Dixie plant of the

Goodyear company since the unit began operations less than a year ago, at Gadsden, Ala. City and plant officials participated in the building of Tire No. 1,000,001 on May 7. Daily production now approximates 6,000 tires, with more than 1,000 employes.

Firestone Promotions

The Firestone Tire & Rubber Co., Akron, O., has made George Kryder manager of the truck and bus sales division. For the past five years he had been in charge of bus sales. He joined the company as a production follow-up man in 1914, following a chemical engineering course at Case School of Applied Science. He spent ten years in production work, the latter years in charge of the production planning, stores, and service departments. Six years ago he went into the manufacturers sales department. A year later he was transferred to the truck and bus sales division, in charge of bus tire sales.

The Firestone Steel Products Co. has appointed W. S. Brink engineer in charge of all developments. He has served as development engineer for rim and all equipment for several years. He came to the Firestone company as construction engineer fifteen years ago after leaving Purdue University. Then he devoted several years to machine construction and operation at Plant 1 during its expansion program. He worked at Plant 2 as master mechanic during the installation of equipment for government work and during the post-war installation and operation of tire making machinery. Six years after, he was called to Steel Products in charge of engineering of factory operation. He later took up development work.

Another promotion is that of Clarence Morr, for the last eight years manager of trade sales of Steel Products. He is now sales manager. He came to Firestone in May, 1913, and worked in the order and production department at Plant 1. Then he went into rim sales work. For eighteen months he served in the Army Medical Department. In 1920 he returned to Steel Products as territory sales representative. He was made trade sales manager two years later.

The Firestone organization recently celebrated its thirtieth anniversary. Harvey S. Firestone, Sr., president of the great company which made so modest a beginning three decades ago, remarked on the many changes wrought in that time. In the beginning the one factory had only ten employes; now 15,000 are employed, including all Firestone plants. Thirty years ago, on good days, the daily output was twelve tires; now the combined efforts of the Akron, Los Angeles, London, and Hamilton plants approximate 80,000 tires daily.

Automobile Production

April production (factory sales) of motor vehicles in the United States, as reported to the Department of Commerce, was 442,630, of which 374,606 were passenger cars, 67,459 trucks, and 565 taxicabs, as compared with 401,382 passenger cars, trucks, and taxicabs in March and 621,910 in April, 1929.

SCION OF NOTED FAMILY OF CHEMICAL MANUFACTURERS

First father and son, then grandson, and now great-grandson to continue the traditions of the Grassellis in manufacturing chemicals. The start was made in 1839 at Cincinnati, O., by Eugene Grasselli, who built the first chemical plant west of the Appalachian Mountains. He took his son,

Clifford Norton

C. A. Grasselli II

C. A. Grasselli, into the business when he was very young and made him a partner. The Cleveland, O., plant began operations in 1866, and soon after that the company headquarters were moved from Cincinnati to Cleveland, following the incorporation of The Grasselli Chemical Co. of Ohio, with Caesar Augustin Grasselli as president.

For thirty years he ruled the destinies of the Grasselli company, relinquishing the presidency in 1916 to his son, Thomas S., who since then has acted in that capacity besides being a director in many industrial and financial organizations as well as one of Cleveland's outstanding citizens. Now we find the fourth generation engaged in the industry.

C. A. Grasselli II came into this world on February 17, 1901, at Cleveland. As the boy grew older, his formal education began, culminating with his graduation from Cornell University, a Bachelor of Arts.

What could be more natural than that the young man should find his business career with the company that bears his illustrious name? On January 1, 1925, he started at the Grasselli, N. J., plant and remained there for two years, learning the operating end of the business. He then went to the Cleveland office, working in the various departments and becoming a vice president and director for the year 1929. On January 15, 1930, he was sent to the development department of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., which absorbed the old Grasselli company in 1928 by a trade of stock. The old Grasselli Chemical Co. of Ohio was dissolved, and in its place The Grasselli Chemical Co. of Delaware was incorporated as a 100 per cent du Pont subsidiary. But the Grasselli Chemical Co. always will continue under that name.

Mr. Grasselli's political beliefs favor the Republican party. He is a member of Delta Kappa Epsilon and its club in New York, the Chagrin Valley Hunt, Tavern, and Hermit Clubs, of Cleveland, Concord Country Club, Concordville, Pa., and the Wilmington Country Club, Wilmington. His favorite forms of recreation are polo, tennis, and hockey.

On October 12, 1929, he was married to Miss Elizabeth Hunkin, of Cleveland. They make their home in Wilmington.

CONSULTING RUBBER TECHNOLOGIST

At 124 Clemmer Ave., Akron, O., will be found a consulting rubber technologist considered by many who know as one of

W. H. Juve

the best in the business. But Walter H. Juve would modestly disclaim such high praise. Yet his education and broad experience combined with his natural ability all have contributed to make him preeminent in his field of endeavor.

He was born in Tacoma, Wash., in 1890. The University of Wisconsin is his Alma Mater, from which he was graduated in 1913.

That same year his name was added to the payroll of The B. F. Goodrich Co., Akron. After a year as works chemist he was transferred to the staff of the development department. Mr. Juve has had charge of compounding, development, construction, and process engineering in various Goodrich mechanical departments as well as of compounding and development in the tire division. He served also as technical superintendent of the hard rubber division. On April 1, 1930, he left the Goodrich company to establish himself as a consulting rubber technologist.

Mr. Juve has taken out many patents on golf balls, hard rubber and mechanical goods, which have been assigned to the Goodrich company.

He is a member of the American Chemical Society, Masonic Blue Lodge, Chapter and Council. He is married and the proud father of three sons and a daughter.

NEW ENGLAND

The United States Rubber Co., New York, N. Y., has announced the appointment of Oliver L. Thompson as assistant general manager and general sales manager of the Sundries Department, with headquarters at Providence, R. I. The products of this department are hard rubber goods, golf balls, soles and heels, druggists' sundries, tile flooring, bathing apparel, and rubber thread. For the past seventeen years Mr. Thompson has been manager of the sundries department of the Davis Brothers Drug Co., Denver, Colo.

Bachrach

O. L. Thompson

On May 3 about one hundred members of the United States Rubber Co. Foremen's Club held their fourth annual dinner and frolic. The gathering was addressed by Arthur Reeves, company official, and Albert Perkins, toastmaster.

The National India Rubber Co., Bristol, R. I., has announced the promotion of James J. Drummey, technical superintendent of the Ked Division, to the position of export contact supervisor with headquarters at Naugatuck, Conn. Robert J. Ford, production superintendent, has been made general superintendent of the Ked Division. Both these advances were effective on June 1.

Converse Rubber Co., Malden, Mass., on May 5 was rocked by an explosion in which six employes were injured when someone, mistaking a can of carbon disulphide for water, emptied it into the sink. The damage from fire, however, was very slight. Work was resumed shortly after the accident.

The Converse company reports net profit of $68,329.08 at the end of its first year of operation as reorganized, following a receivership of a year ago. Directors reelected are Isidor Fox, M. B. Kaufman, A. H. Weschler, and Alfred Gardner. Isidor Fox was elected clerk, and W. B. Allen was reelected treasurer.

Heveatex Corp., 50 Congress St., Boston, with offices and depot at 67 Maplewood St., Malden, both in Mass., imports rubber latex in which it deals and sells in various processed forms for various manufacturing requirements. J. Barret Crockett is president.

The Fine Rubber Co., manufacturer of raincoats and rubber surfaced clothing and rubberizer of rainproof fabrics, has announced the removal on May 1 of its Cambridge, Mass., raincoat plant to new and larger quarters at 28 Carleton St., Kendall Sq., Cambridge. The additional space will give triple production capacity. The company also owns and operates a rubberizing plant at Malden, Mass., and maintains sales offices at 132 W. 31st St., New York, N. Y.

A. G. Spalding & Co.'s refinery building of its sporting goods manufacturing plant, Chicopee, Mass., was destroyed by fire on May 13. Highly explosive materials used in manufacturing golf balls, caused a rapid spread of the flames, and at one time the entire plant was threatened. An unofficial estimate places the damage at $200,000.

Seamless Rubber Co., New Haven, Conn., recently won a decision against an employe who, after being vaccinated by the company and subsequently contracting an infection of the blood stream, sued for compensation. The decision of the courts was that disability arising from vaccination is not compensible.

Stanley Krall, manager, compound division product development department of The Fisk Rubber Co., Chicopee Falls, Mass., who was recently elected chairman of the Rubber Division of the American Chemical Society, has again been honored. Announcement has been made of his appointment as chairman of the Advisory Committee for the Rubber Exhibit for the Chicago World's Fair Century of Progress 1933.

Stanley Krall

The Goodyear Rubber Co., Middletown, Conn., reports a profit of $10,500 in the first year of operation. The board of directors and the following officers were reelected: President Harold S. Guy; vice presidents, Arthur V. McDowell; treasurer, Charles M. Parks; secretary, Philip E. Reilly.

David A. Cutler, president and treasurer of the Alfred Hale Rubber Co., Atlantic, Mass., recently was elected president of the Quincy, Mass., Rotary Club.

Levi C. Wade, manufacturer of molds for rubber heels and soles, has moved from 650 Summer St. to 79 Bennett St., Lynn, Mass.

Norwalk Chief's Well Won Advancement

Since he left his birthplace in Albany, Western Australia, and first made his home on the Pacific Coast, John Wm. Whitehead, since 1927 president of the Norwalk Tire & Rubber Co., Norwalk, Conn., has forged to the forefront in the rubber trade through sheer ability and industry. If others helped in his advancement, it was usually through shrewd appreciation of his sterling personal character and his rare business traits.

Blank-Stoller, Inc.

John Wm. Whitehead

Mr. Whitehead received a good basic education in the grade and high schools of his native city, where he early showed a decided commercial bent. His first work in America was done as an accountant with the Western Electric Co., San Francisco, Calif., 1905-1907. In the latter year he first contracted "rubberitis," and his friends doubt if he will ever wholly recover from it. From 1907 to 1910 he helped to make things so lively in the sales department of the Diamond Rubber Co. in 'Frisco that he was made assistant Pacific Coast manager of the company. A chance to get into big business on the Atlantic Coast tempted him in 1914, when he cast his lot with the Norwalk Tire & Rubber Co., starting modestly in the accounting department.

In 1916 Mr. Whitehead was transferred to the sales department, and in 1918 was made assistant sales manager. His success won him promotion in 1923 as Atlantic Coast sales manager. In 1926 he was named general sales manager, and, to cap the climax, he was chosen in 1927 as Norwalk's president, which office he still retains.

Taking a keen interest in industrial relations, he has rendered much important service as a member of the American Arbitration Association. He is a Mason and belongs to the New York Athletic Club, Westport Country Club, and Long Beach Shore & Country Club. His home is on Elmcrest Terrace, Norwalk, Conn.

EASTERN AND SOUTHERN

American Process Co., manufacturer of driers and water separators for reclaimed rubber, has moved its offices from 117 Liberty St. to the Dodge Bldg., 53 Park Place, New York, N. Y. C. E. Emerick is manager of sales.

The Harshaw Chemical Co. of New York, Inc., has announced the removal of its offices to the Chrysler Bldg., 405 Lexington Ave., New York, N. Y.

Henry L. Doherty, president of the Henry L. Doherty & Co., which owns and controls the General Atlas Carbon Co., 60 Wall St., New York, N. Y., won the 1930 award of the Watson Clark Medal bestowed annually by the Franklin Institute, Philadelphia, Pa. He received the honor "in consideration of his outstanding and valuable work in the development of the manufactured gas industry." Presentation of the medal was made on May 21 at the Institute, and after the exercises a dinner was given in Mr. Doherty's honor at Bellevue-Stratford Hotel.

I. B. Kleinert Rubber Co., New York, N. Y., according to Victor Guinzburg, president, announced recently that it had acquired the Masonia Rubber Works, a large manufacturer of fine sponge rubber in Hamburg, Germany. This purchase gives Kleinert two European plants, the other being in Paris, France, and marks the company's entrance into the manufacturing field of sponge rubber products.

E. T. Trotter & Co., 576-602 Johnson Ave., Brooklyn, N. Y., manufactures saturated waxes for wires and cables. The company will also take up the development of rubber compounding materials. Charles F. Devine, formerly chief chemist of Habirshaw Cable & Wire Corp., Yonkers, N. Y., is director of the technical department.

Hilton, Wallace & Co., Ltd., 59 Eastcheap, London, E. C. 3, England, is prepared to offer rubber latex in all strengths from 30 to 60 per cent dry rubber. The latex is packed in tins, cases, and steel drums. The company specializes in raw and crepe sole rubber. L. Wallace is director.

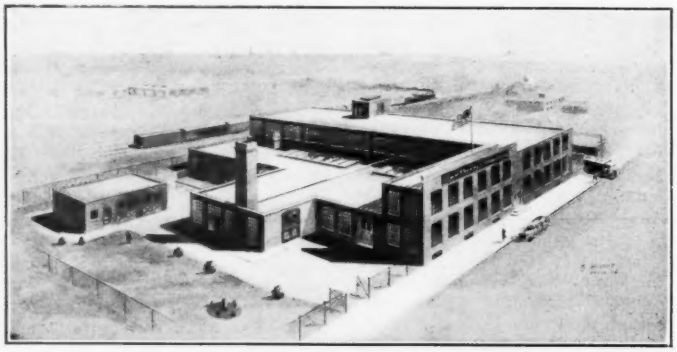
The Vulcanized Rubber Co., Morrisville, Pa., continues to operate normally.

The St. Joseph Lead Co., 250 Park Ave., New York, N. Y., plans to erect a zinc smelter near Monaca, Beaver Co., Pa., to provide smelting facilities for the production of zinc concentrates from the company's mines in St. Lawrence Co., N. Y.

The J. M. Huber Petroleum Co. was incorporated recently as an oil and natural gas producing organization. The new company controls about 4,800 acres in the heart of the Hutchinson County fields in the Texas Panhandle. At present eight producing oil wells are on the property and an estimated open gas flow in excess of 500,000,000 cubic feet per day. This amount of gas, if burned into carbon black, would produce over 200,000,000 pounds, or half the world's demand per year. Additional oil wells are being drilled. The natural gas flow is held in reserve against the Huber company's future expansion in natural gasoline and carbon black operations.

The United States Rubber Co., to bring the output of tire cord to the new requirements of the Detroit, Mich., tire plant is expanding its cotton production facilities at Winnsboro, S. C. Three important steps are included in this expansion program. First, production capacity will be increased about 17 per cent. The installation of additional equipment will be started immediately, and the additional production is expected to be available in July. While most of the southern cotton mills have been on short hours, the heavy demand for United States tires has compelled the Winnsboro Mills to turn out every pound that the present machinery and equipment will permit and rush work on providing increased capacity.

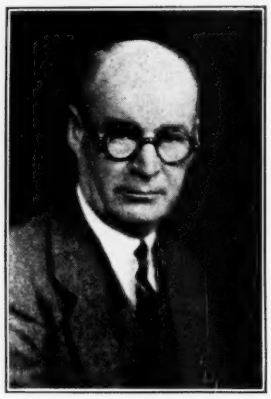
The United States Rubber Co.'s vice president and general manager, L. D. Tompkins, other high officials of the company, and representatives of a large automobile concern, spent a week last month inspecting the United States Rubber Co.'s branch office in Charlotte, N. C.



New Quarters of the Linear Company

Technical Director of Insulating Materials Co.

E. T. Trotter & Co., maker of saturating and finishing compounds for wires and cables, Brooklyn, N. Y., takes great pleasure in its acquisition of Charles F. Devine as director of its technical department. Mr. Devine is well fitted by education, experience, and natural ability for his present post.



Charles F. Devine

He was born in Boston, Mass., in 1881 and was educated at Boston Latin School and Harvard.

As metallurgist with the Walworth Mfg. Co., Boston, he began his business career. Later he became instructor of industrial chemistry at the Franklin Union of Boston. In this capacity he frequently served various rubber companies as a consultant.

His first rubber position came in 1911 with the Habirshaw Electric Cable Co., succeeding Dr. William Habirshaw. Eventually Mr. Devine was appointed chief chemist in charge of rubber development work. But recently he resigned to accept the offer of the Trotter company.

Linear Packing & Rubber Co. Moves Into New Plant

The factory and general offices of the Linear Packing & Rubber Co., formerly at Marshall & Berks Sts., Philadelphia, Pa., are now located at State Rd. and Levick St., Tacony, Philadelphia. This plant supplements the rubber mill recently acquired and enables the entire line of production from raw materials to finished product to be carried on within one unit.

Linear is one of the largest and most up-to-date American plants devoted to the manufacture of piston and sheet packings, pump valves, molded rubber specialties, gaskets, etc., sold for resale only. It is one of the oldest packing manufacturers in the country, having been established in 1898 to specialize in packing manufacture for all machinery requirements. The officers are: A. W. Swartz, president; Frank Mayo, vice-president; W. C. Fisler, secretary-treasurer; A. A. Stevenson, chairman of the board.

Turnstile Silencer

A simple and effective solution of the problem of silencing the operation of New York subway turnstiles has apparently been reached. The device that accomplishes this welcome result involves the use of rubber as a shock absorber. The silencer is the invention of Arthur Anderson, assistant engineer of the Interborough Rapid Transit Co.

The new device consists of a steel pendulum suspended from a fulcrum casting bolted to the rear of the turnstile. The pendulum is weighted at the lower end, and a rubber roller is mounted at the upper end above the fulcrum point. Attached to each cross arm of the turnstile is a radial metal cam so located that when the pendulum is perpendicular, the cam overlaps the rubber roller. Therefore, when the cross is revolving, the metal cams coming successively in contact with the rubber roller, check the momentum of the cross, thus bringing it to a stop on center.

At the Grand Central Station of the Interborough's Lexington Ave. line in New York seven of these devices have been installed for testing their efficiency and durability. The device, while not actually eliminating all noise, reduces the crashing of the turnstiles to a faint, muffled impact.

The chairman of the New York Noise Abatement Commission has commented on this device as a "remarkable achievement" and called the installation of the new device the first "actual accomplishment of the commission."

Rubber Floor Covering for Telephone Booths

The new types of telephone booths are now being manufactured, one to accommodate the patron standing and the other equipped with a seat. These booths are more attractive, serviceable, and comfortable than those of the present time. Rubber contributes notably to this improvement. It is used as a floor covering. This is of a single sheet of quarter-inch rubber, mottled black and white, which will not readily stain or become spotted with cigarette burns. The edges of the sheet are folded upward to form a base board six inches high around the lower portion of the sides and back, serving them as kick plates and as a protection from dampness when the booth is mopped. Bronze binders are used to conceal the edges of the rubber covering. The manufacture of 25,000 booths of the new design is planned to meet the first year's demands.

Stainless Thermax

Thermax, a carbon black of special quality, serves satisfactorily as a high grade soft filler for carcass stock in combination with captax as accelerator and stearic acid as an activator and softener. These materials will not bleed through white sidewalls of tires. In a construction of this sort it is advisable to lap the tread over the sidewall than to bring the thin white wall strip up over the black stock.

NEW JERSEY

The rubber industry in New Jersey is holding its own, and manufacturers expect a fairly good summer. The present busy departments make garden, fire, and suction hose. The rubber tiling situation also shows a marked improvement. In another month the busy season will begin in the production of rubber footwear and other athletic goods. Tire production remains good, with low prices. Little change occurred in the hard rubber field.

The Thermoid Company, Trenton, N. J., has plenty of orders on hand and is shipping brake lining and other materials to foreign countries.

The company, which is a large maker of asbestos products including brake linings, reports net sales of $1,765,752 for the first four months this year, as compared with $2,058,522 for the corresponding period in 1929. Unfilled orders of the Southern Asbestos Co., subsidiary of Thermoid, amounted to $1,216,353 on May 1.

The Murray Rubber Co., Trenton, N. J., announces the appointment of Arthur W. McMahon as general sales manager. He had been with the Raybestos-Manhattan Co. for some time and is well experienced in handling chain-store orders. The Murray company reports an operating profit of $14,000 for April. The plant is running 75 per cent capacity.

The Raritan Rubber Co., New Brunswick, N. J., has disposed of its building to the Anroxylin Chemical Corp. The plant is 50 by 150 feet surrounded by five acres of ground.

Kelso Manufacturing Co., Trenton, N. J., manufacturer of brake lining and clutch facing material, suffered a severe loss by fire on May 10 when the store room and shipping department were damaged.

Whitehead Bros. Rubber Co., Trenton, N. J., is operating to capacity and is particularly busy in the fire, garden, and suction hose departments.

Puritan Rubber Co., Trenton, N. J., declares that business for April has exceeded that of any other month during the past few years. The concern is very busy with rubber tiling orders.

The Fisk Tire Co., Inc., Chicopee Falls, Mass., held a dinner-meeting on May 5 for the district distributers and automobile dealers at the Park Hotel, Plainfield, N. J. W. H. Loyd, of the New York office of the Fisk company, was in charge. The purpose of the meeting was to demonstrate the manufacture of Fisk tires in a moving picture lecture.

Charles Given, district manager of the Fisk company, was the chairman and principal speaker at a dinner and meeting of Fisk tire dealers of Trenton, N. J., and adjacent towns on May 7. The event was held at the Hotel Hildebrecht.

The Michelin Tire Co., Milltown, N. J., plant seems definitely to have been abandoned. The company shipped one of the old calenders to its factory in Germany and another to France. One of the test cars which covered 250,000 miles has been sold with other automobiles. Some of the foremen returned to France after the Milltown plant was shut down, as it was not necessary to retain them under present conditions. Many of the residents of Milltown who were employed at the tire plant have moved away, and the village is practically deserted. J. Hauvette Michelin, vice president and general manager, declared that he did not know when the plant would reopen.

Raybestos-Manhattan, Inc., Passaic, N. J., will install additional equipment to enlarge the molded brake lining department 300 per cent. Production of V-type rubber belts for transmission drives also will be increased.

Essex Rubber Co., Trenton, N. J., is installing additional equipment to take care of increased orders in the future. The company reports fairly good business and expects to be busy the next few months on summer footwear.

Firestone Tire Co., 1226 Main St., Asbury Park, N. J., will erect a one-story service station, 70 by 100 feet, to cost $150,000.

Mercer Rubber Co., Trenton, N. J., states that business is showing a little improvement over previous months. William H. Sayen, Jr., Mercer president, has returned from an extended trip through the Far West and reports improved business on all rubber goods.

William E. Riley, Trenton manager of O'Brien & Hoover, Trenton, N. J., Goodyear tire dealers, spent several days visiting the Goodyear Tire & Rubber Co. plant at Akron, O.

The Joseph Stokes Rubber Co., Trenton, N. J., reports that the hard rubber business is picking up considerably.

A. S. T. M. Annual Meeting

The thirty-third annual meeting of the American Society for Testing Materials is scheduled to be held at Chalfont-Haddon Hall, Atlantic City, N. J., June 23-27, 1930. An unusual number of valuable reports and papers will be read. Especially interesting sessions are expected in the fields of paint and rubber. A symposium on rosin is planned, and a series of brief papers will be presented introducing discussion on the various uses of this material including those in the rubber industry.

The program of papers on rubber and textiles includes the following: Report of Committee D-11 on Rubber Products, W. B. Wiegand, chairman; Performance Characteristics of a Four-Inch Four-Ply Rubber Transmission Belt, Branded "Condor," J. E. Skane; Stretch in Rubber Transmission Belting, C. W. Staacke; Service Tests on Rubber Belting, E. G. Kimmich; Laboratory Flexing as an Aid to Investigating the Pneumatic Tire Carcass, H. A. Depew and H. C. Jones; Report of Committee D-13 on Textile Materials, W. H. Whitcomb, chairman.

MIDWEST

United Carbon Co., manufacturer of carbon blacks and gasoline, Charleston, W. Va. William W. Higgins, manager of its New York, N. Y., office, spent the week of May 12 calling on the trade in Chicago, Ill., cooperating with Jas. H. Furman Co., local representative at 844 Rush St., Chicago.

Velvetex Corp., La Porte, Ind., and 120 S. La Salle St., Chicago, Ill., manufactures Velvetex, a rug and carpet lining, of rubber and wool. The company makes also novelty rugs, seat pads, table covers, etc., of the same materials. The lining is made in ¼- and ½-inch thicknesses in any roll length up to 50 feet and up to 5 feet in width, all one piece. Narrower widths are also available.

Paul Van Cleef, of Van Cleef Bros., Chicago, Ill., sailed last month to attend a meeting of rubber chemists at Frankfort, Germany, during the week of June 15. This is the first time since the war that Germany has invited American and British chemists to join in discussing scientific problems of interest to all nations. While abroad Mr. Van Cleef will visit his company's connections in England, Belgium, France, Germany, and Austria. He will return to the United States in July.

Kansas City Whiting Co., Kansas City, Mo., producer of precipitated calcium carbonate, chalk, kalk spar, and whiting, has equipped a new plant to manufacture precipitated calcium carbonate. This material is prepared from what previously was waste from the manufacture of soap. It has many industrial applications among which are high-grade rubber articles. The company is owned by a Kansas City group of business executives.

The C. F. Pease Co., manufacturer of blue-printing machinery, etc., 813 N. Franklin St., Chicago, Ill., has announced the promotion of C. D. McCormick from assistant advertising manager to advertising manager, succeeding W. Earle Pashley, now second vice president and assistant sales manager. Mr. McCormick has been with the company more than four years, previously having served with the Illinois Glass Co., Alton, Ill.

The International Printing Ink Corp. and the dyestuffs and chemical division of the Newport Co., Milwaukee, Wis., will consolidate to form a new company. A. A. Schlesinger, now Newport president, will be chairman of the board of directors of the new company, and John M. Tuttle, present president of the International corporation, will become president of the new firm.

Cutler-Hammer, Inc., pioneer manufacturer of electric control apparatus, Milwaukee, Wis., effective May 1, purchased the Union Electric Mfg. Co., also of Milwaukee, manufacturer of motor control specializing in drum type control apparatus. This addition enables Cutler-Hammer to suppy any requirement of its customers for such equipment. The Union branch sales offices and warehouse stocks will be consolidated immediately with C-H branch offices and warehouses. The Union factory will be operated as a manufacturing division of Cutler-Hammer. E. F. Le Noir, Union president, will join the C-H headquarters sales staff. Most of the Union personnel, particularly from the sales and engineering departments, also will come to the C-H organization.

The United States Rubber Co., according to Joseph F. O'Shaughnessy, general manager of the tire department, is operating its tire plant at Detroit, Mich., at full capacity to meet an increased demand arising from the extension of the company's original equipment business and greatly enlarged replacement sales. In keeping with this, the company is expanding its cotton production facilities at Winnsboro, S. C., to bring the output of tire cord to the new requirements of the tire plant. The Detroit plant has been working three eight-hour shifts daily and seven days a week. Daily tire output is at the highest point since 1906, when the Detroit plant was first opened, and maximum capacity is expected to be maintained well into the summer, Mr. O'Shaughnessy said.

The aggressive tire sales program has resulted not only in a sizable increase in original equipment business but also in the opening up of many new dealer outlets throughout the country, according to L. M. Simpson, general sales manager.

United States Rubber Co. Intermountain Executive

Mining engineer, soldier, salesman, superintendent—Harry M. Green. The present district manager of tire sales, and until recently representative in the mining division in the inter-mountain territory of the United States Rubber Co., has followed a varied but successful career. It began after three and a half years of general science and engineering at Utah Agricultural College, which he was compelled to leave because of limited finances. But the lack of a degree hampered him not. From 1915 through part of 1917 he was employed by various mines and engineering companies in Utah, Arizona, and Idaho. In September, 1917, the young American answered his country's call to arms and did not return to civil life until February 8, 1919. On March 17 he joined the Mountain States Rubber Co., local jobber of mechanical goods, as special mining representative through Montana, Wyoming, Idaho, and Utah. In September, 1920, Mr. Green accepted a position purchasing materials and superintending operations with a contracting company.

His services with the United States Rubber Co. started on May 8, 1922, when he was hired as a tire salesman. Soon after, he was transferred to the mechanical department as mechanical salesman. In 1925 he was sent to the mining division on mechanical sales for Montana, Idaho, Utah, and Nevada. In September, 1927, he was appointed manager of the Salt Lake City branch, retaining, however, the position with the mining division until recently.

Harry M. Green

Harry M. Green was born in Salt Lake City, Utah, on September 4, 1894. He is affiliated with several civic associations. His business address is with the rubber company, 160 Motor Ave., Salt Lake City; his home address is 1366 Emerson Ave., also in his native city.

Mail Order Tires Reduced

Sears, Roebuck & Co., Chicago, Ill., will distribute to customers over 10,000,000 midsummer sale catalogs, which announce price reductions on many articles of merchandise. The reduction on Ford sizes of tires is 4.1 to 6 per cent. Ford balloons are now $5.55 against $11.25 four years ago. This cut brings Sears' All-State tire prices to the lowest levels in history. In 1926, when the company sold 1,000,000 All-State tires, the Ford size sold for $11.25. Sales were 1,750,000 in 1927, 3,500,000 in 1928, and 5,000,000 last year, while prices have been reduced steadily as sales increased. The company states that current decrease reflects larger sales volume, lower production costs, and a new drop in cost of raw materials.

Test of Rubber Mounting

An improvement in the application of rubber in automobile engine mountings consists in bonding the rubber pad to steel plates on either side. The tenacity of this bonding as applied in the factories of the Chrysler Corp. was recently demonstrated at that company's Detroit plant. A De Soto straight eight car was lifted two feet from the ground and held suspended for five minutes by a block of rubber of 12 square inches area bonded top and bottom between two thin plates of steel.

The security of the bond between the rubber and steel is indicated by the fact that the joint was not impaired by the test, and under the strain the rubber stretched only ⅛-inch. The union was sufficiently strong to lift double the test load, according to the statement of the engineers who conducted the test.

PACIFIC COAST

Pacific Goodrich Rubber Co., Los Angeles, Calif., is making good headway, according to Vice President and General Manager Samuel B. Robertson, and the indications are, he says, that 1930 will show a substantial increase in output. Mr. Robertson and Advertising Manager E. T. Morris spent the latter part of May inspecting company branches in the Northwest. The retail division, Goodrich Silvertown, Inc., added two more stores to its chain in May, at Bakersfield and Sacramento, Calif., according to General Manager E. W. Show. These super-service stations, according to Works Superintendent F. A. Nied, obtain for the plant valuable information on tire and tube performance. F. L. Hockensmith, Goodrich Los Angeles branch manager, was chairman at the meeting and luncheon of the Los Angeles Advertising Club at the Biltmore Hotel on May 20, and a talk on the tire and rubber situation was given by Frank E. Titus, general sales manager of the Pacific Goodrich Co., recently returned from a conference with executives of the parent Goodrich company at Akron, O.

Hewitt-Gutta Percha Rubber Corp., Buffalo, N. Y., announces the appointment as distributers for northern California of the Marshall Newell Supply Co., leading dealer in mill and factory supplies, at Spear and Mission Sts., San Francisco, Calif. Chas. K. Everett, the Hewitt company's resident manager, will be stationed with the Marshall Newell concern to give its salesmen and customers personal service in the marketing of Hewitt belting, hose, and packings. Mr. Everett states that the new arrangement is giving very satisfactory results, business being extremely good.

General Tire & Rubber Co., Akron, O., will distribute in the San Francisco district through a newly formed firm, the General Tire Co. of San Francisco, headed by Howard F. Smith, formerly sales manager of the General company at Akron. Assisting President Smith will be J. P. Mulligan, general manager, and the staff of the Colburn-Schroeder Co., which firm merged with Howard F. Smith & Co. to form the new General concern. Headquarters will be at 1547 Mission St.

Continental Rubber Co., Erie, Pa., has appointed J. L. Alstaffer as its new Pacific Coast sales manager with headquarters at 699 Second St., San Francisco, Calif.

Pacific R. & H. Chemical Corp., subsidiary of the Roessler & Hasslacher Chemical Co., and recently acquired with the latter by the Du Pont interests, reports a well-sustained demand for the whole-tire reclaimed rubber which it produces. Recently it installed a special conveyer system and an additional cracker at the plant in El Monte, Calif.

Carbon Products Corp., 2357 E. Slauson Ave., Los Angeles, Calif., is erecting on a 4½-acre tract in the Laguna-Maywood industrial district a factory, which with its equipment will cost nearly $250,000. It will employ 150 men and have a yearly payroll of $250,000 when in full operation. One of its chief products will be carbon black for the rubber industry. The factory is said to be the only one using crude oil instead of natural gas in making carbon black. It is said that the black has stood a tire test of over 30,000 miles, and that the factory will have a capacity of 30,000 pounds a day. The officers of the company are: president, Ralph R. Langley; chairman of the board, John McKeon; treasurer, Hugh J. Robertson; secretary, J. V. Westbrook; all of whom are directors with John J. Doyle, L. M. Lockhart, and A. J. Delaney.

Super Mold Corp., Lodi, Calif., manufacturer of full-circle tire-treading machines, recently doubled the capacity of its foundry and installed additional machinery in its machine shop in order to handle orders which are now coming from all parts of the United States. Encouraged by the success of the treading equipment in this country, the company is planning to market it abroad very soon. The officers are: president, W. B. Thurman; vice president, H. J. Woock; and secretary and sales manager, G. O. Beckman.

American Rubber Mfg. Co., Oakland, Calif., reports that trade during the past month has shown a decidedly better tone than for several months previously and that the outlook for the remainder of the year is very reassuring. It issued in May a complete and attractive catalog.

Patterson-Ballagh Corp., 1900 W. 65th St. and Wilmington Blvd., Los Angeles, Calif., is erecting an addition to its factory to cost nearly $300,000. The company is a large manufacturer of general mechanical rubber goods and rubber specialties for the oil industry.

Clarence Harvey, of Belize, British Honduras, has been studying rubber growing at government and private experimental stations in the Southwest. His father was J. C. Harvey, one of the creators of the Guatemala chicle industry, and he had been associated for many years with P. W. Shufeldt on a 50-square-mile concession.

Henry C. Pearson, founder of the INDIA RUBBER WORLD, has been elected a member of the advisory council of the chamber of commerce of Palm Springs, Calif., and also a managing director of the local bank.

W. R. Hucks, chief chemist, Pacific Goodrich Rubber Co., Los Angeles, Calif., addressed the Kiwanis Club at Fullerton, Calif., on May 12, on "Crude rubber preparation and American rubber growing prospects."

Sirco Products Co., 1034 S. Alvarado St., Los Angeles, Calif., manufactures Sirco safety electrical products including rubber plugs and sockets, extension cables, and lamp guards. The officers are J. L. Adams, president; F. W. Hudson, vice president; and C. V. Cook, secretary-treasurer and purchasing agent.

Harrison & Noyes, chemists, 520 W. Ester St., Long Beach, Calif., are finding a brisk demand for a novel rubber device for taking dental impressions. It consists essentially of a pad of choice rubber compound, uncured, which is used to replace plaster and other compositions. The firm recently installed a "baby" Banbury mixer, a tuber, and other rubber working machinery.

Golden State Rubber Mills, Inc., 1920 E. Vernon Ave., Los Angeles, Calif., found a decided improvement in business during the past three weeks. The mills make a wide variety of rubber goods for the oil fields and the trade building, as well as many novelties. Articles of molded Bakelite also figure prominently among products. President Emmet S. Long, who has been in Europe several months on his honeymoon, is expected to return shortly. Actively in charge are Secretary-Treasurer G. H. McDonald and R. B. Stringfield, manager of the technical department.

Rubber Service Co., 2456 E. 55th St., Los Angeles, Calif., which recently bought the business of Rex Rubber Co., Inc., manufacturer of heels, soles, and various novelties, is producing in addition a general line of mechanical rubber goods and many patented specialties. Trade is steadily improving, according to Manager W. Tilescon.

Goodyear Tire & Rubber Co., Los Angeles, Calif., has recently noted a much more cheerful feeling in the trade, as evidenced by a large increase in orders. Production has been stepping up steadily, with increase in overtime, and tire output is said to be averaging close to 11,000 daily. Recent visitors from the parent plant in Akron have been R. S. Wilson, vice president and general sales manager; C. T. Hutchins, advertising manager; and Fred L. Morgan, automobile tire department manager. M. B. Uhrich, of the Akron Goodyear works, has been appointed chief engineer of the Los Angeles plant. Compounding Assistant J. W. McGrath has been spending a few weeks at the Akron plant, and Richard W. Bell has been added to the laboratory staff. Goodyear Textile Mills recently celebrated the making of the 50,000,000th pound of fabric manufactured at the Los Angeles mills since the opening on August 14, 1920. The cotton used averaged 94 per cent southwestern long staple. Welton A. Snow, former city manager at Miami, Fla., has been appointed assistant resident manager of Goodyear's 37,000-acre cotton plantation near Phoenix, Ariz., according to an announcement by company officials.

Samson Tire & Rubber Corp., Los Angeles, Calif., is experiencing considerable activity at its big new plant owing to the receipt recently of an exceptionally large influx of orders from its own sales branches and its larger customers. The outlook for the remainder of the year is said to be very encouraging. The company is steadily adding to its roster of dealers in various parts of the country.

Firestone Tire & Rubber Co. of California is weekly utilizing more of the space and the equipment in the recently completed additions to its Los Angeles, Calif., plant, which are designed to double the latter's capacity. From its distributers in the eleven far west states the company learns of a rapidly growing demand for replacement tires, and in this it is believed that 1930 will break all records. Vice President and General Sales Manager R. C. Tucker, who has been spending several weeks in the Northwest, reports very good prospects there. It is intimated that some important changes may be made soon in the purchasing department. A recent visitor to the works was R. R. Jones, engineering expert from the Firestone plant in Akron, O. Westinghouse Electric & Mfg. Co. recently installed an electrical control for the plasticizers used in priming stock for the internal mixers.

Eno Rubber Corp., 110-114 E. 17th St., Los Angeles, Calif., reports that its factory at Torrance, a suburb, is busier than it has been in a long time on standard mechanicals and specialties.

United States Rubber Co. has through Paul Coste, head of its flooring division at Providence, R. I., been making an intensive study of rubber tiling and paving prospects on the Coast. He has been accompanied by Ben Nash, a tiling color expert.

CANADA

Manufacturers of rubber footwear are taking orders for next fall. Not much variation in women's overshoes, as during the past two or three years, is expected. Both manufacturers and distributers find it to their advantage to cut such variations down to a minimum, for the multiplicity of styles had proved undesirable, and now standardization is the rule. The market for rubber footwear at present seems fairly stable.

Rubber-soled shoes are not yet much in demand; but buyers have started inquiries. Indeed, a few sneakers for boys' wear have been sold, but it is too early for this footwear to move actively. As a rule the Queen's Birthday (Empire Day), May 24, usually ushers in sport activities.

Rubber manufacturers state that orders for garden hose are being delivered. So far no cancellations or reductions have been received from the trade whose orders make a high total. Warm, dry weather is needed to stimulate the early sale of hose.

Last year rubber manufacturers deducted one per cent from the face value of invoices for goods in which the tax was included in the price. They are doing the same thing this year with the further reduction in the sales tax from two per cent to one per cent. This applies on all mechanical rubber goods quoted "sales tax included" with the exception of garden hose. On the latter item manufacturers claim they made allowance for the anticipated sales tax reduction when naming prices for 1930 spring booking.

The crowded golf courses are ample testimony to the splendid sales reported in golf equipment and golf balls during the past few weeks. The sale of golf balls so far this season has been much better than last year, and the probabilities for a continued good market are very fair.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., showed in April sales a slight improvement over the previous month. While a year of business expansion is not anticipated, fewer cars being produced, the replacement business is good, with every assurance that it will show marked growth in 1930. Production of Goodyear in April was 7,000 tires and about the same number of tubes. Business in departments other than tires and tubes has been holding up well.

C. A. Joslin, Panther Rubber Co., Ltd., Sherbrooke, P. Q., has been appointed one of the representatives on the Dominion Executive Council of the Canadian Manufacturers' Association.

P. E. Boivin, Granby Elastic Co., Ltd., Granby, P. Q., at the recent annual meeting of the Canadian Manufacturers' Association, Quebec Division, was elected a member of the Dominion Executive Council.

The American Wringer Co., Ltd., Farnham, P. Q., has completed negotiations with the Stedman Rubber Flooring Co., South Braintree, Mass., U. S. A., whereby the former will manufacture rubber flooring in the building adjoining that in which it is now making rubber covered rolls for the pulp, paper, textile, and washing machinery trade. Operations are expected to begin almost immediately. This will require about 25 employes for a start.

G. R. Donaldson has been appointed manager of the Toronto branch of the Canadian Goodrich Co., Ltd., Kitchener, Ont. He is a former resident of Toronto, having left the city to occupy various positions with the company in Western Ontario.

Governor Fastener Co. of Canada, Ltd., Montreal, P. Q., has definitely decided to name its new elastic webbing the "Governor." It is designed for use on boys' knickers and men's sport and outing trousers.

Joseph Stokes Rubber Co., Trenton, N. J., U. S. A., will erect two machine shops 40 by 60 and 50 by 60 feet and a brick laboratory at its Canadian plant at Welland, Ont. Contract for the work has been let to Gardner Construction Co., Welland.

IT IS OFTEN SAID THAT A TIRE IS AS much a cotton as a rubber article, but in making tires in 1929 we used some 913,920,000 pounds of crude rubber with .314 per cent or 287,000,000 pounds of cotton. Usually a product is named from its chief constituent.

Prominent Canadian Rubber Manufacturer

The rubber manufacturing industry in Canada owes much to the indefatigable efforts of William Harlow Miner, president and general manager of the Miner Rubber Co., Granby, P. Q. He has devoted his entire business career to rubber, starting in 1898, to learn the business, with the Granby Rubber Co., Granby, of which his uncle,

Blank-Stoller, Inc.

Wm. H. Miner

S. H. C. Miner, was founder and owner. William Miner proved an excellent worker, winning promotions to become manager in 1907.

In the fall of the next year, however, he resigned to join his uncle in organizing the Miner Rubber Co. and was made vice president and general manager. He was appointed to his present executive position in 1926.

Mr. Miner was born at Granby on December 16, 1879. He attended the local high school and later took courses at McGill University. He is married and resides at the Chateau Apartments, Montreal, P. Q. His summer home is in Granby.

Many societies and business and fraternal organizations have benefited by his association. He is first vice president of the Canadian Manufacturers Association and has been chairman of the Quebec Branch of the Association. He is a member and past president of the Rubber Association of Canada. He acts also as a director of Congdon Marsh, Ltd., Winnipeg; of Southern Canada Power Co., Ltd., Montreal; of Nordic Hosiery Co., Ltd., Granby; of United Maple Products Co., Ltd., Granby. He is a member of the Montreal and Granby Boards of Trade. He was a governor of the Congregational College of Canada until the union of the churches, now The United Church of Canada. He was, too, a member of the old Rubber Association of America. Mr. Miner is a Mason, Scottish Rite, and a member of the Canadian and Engineers Clubs of Montreal, the Lotos Club of New York, the National of Toronto, and the Summerlea and Granby Golf Clubs.

Mr. Miner is interested also in aviation and breeding cattle. The pure-bred Jersey stock on his farm is a constant source of much satisfaction.

Obituary

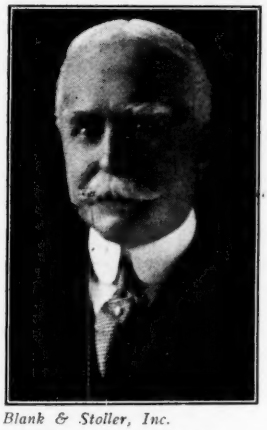
Noted Rubber Executive

WHILE watching the Yale-Pennsylvania-Columbia regatta at Derby, Conn., on May 3, Henry Lucius Hotchkiss suddenly collapsed and died, a victim of heart disease. He was the second generation of a family devoted to the rubber industry for nearly ninety years.

Mr. Hotchkiss was born at New Haven, Conn., on December 18, 1842, and he lived there all his life, not only building up a business of great advantage to the community but likewise actively participating in every movement of civic benefit. He was also an ardent fan of all Yale sports.

He was educated at Williston Academy, Easthampton. Early in life he showed a decided flair for business. From 1860 to 1863 he was paymaster of the New Haven & New London Railroad, of which his father, Henry Hotchkiss, renowned pioneer rubber manufacturer, was a trustee. The son also assisted him when the latter was elected president of the United States Pin Co.

In February, 1863, the younger Hotchkiss was appointed secretary of L. Candee & Co., and soon after became treasurer



Blank & Stoller, Inc.

Henry L. Hotchkiss

when his father resigned that position. The son continued to fill both posts until the death of his father. Then he was chosen president. For many years he acted in that capacity and also as treasurer.

When in 1892 the Candee company joined with several other rubber firms to form the United States Rubber Co., Mr. Hotchkiss still remained the head of the Candee company and manager of its internal affairs. He was a director of the United States Rubber Co. from its organization until May, 1929, and for its first seven years worked on the executive committee, resigning in 1899 to travel in Europe.

Succeeding his father in 1871, Mr. Hotchkiss was president of the Union Trust Co. of New Haven until 1912. He was a director of the Union & New Haven Trust Co. and its predecessor for fifty-nine years. For over forty years he served as a director of the National New Haven Bank. Besides, he acted as a trustee of the Hopkins Grammar School. He was one of the original stockholders of the Revere Rubber Co., a director from 1883 to 1898, and its president in 1888. From 1894 to 1901 he was, too, a director of the Rubber Manufacturers' Mutual Insurance Co.

He is survived by two daughters and a son, H. Stuart Hotchkiss, who recently severed his active connection with the rubber industry when he resigned from his various positions with the U. S. Rubber Co.

Funeral services were held on May 5 at the Hotchkiss home, 55 Hillhouse Ave., New Haven. A private burial followed.

Popular Rubber Broker

THE friends and business associates of Harold W. French, president of H. W. French Co., Inc., rubber broker, 347 Madison Ave., New York, N. Y., were

Blank & Stoller, Inc.

Harold W. French

greatly shocked by his death on May 21, which occurred during an operation at the White Plains Hospital.

Harold W. French was a native of Boston, born on August 25, 1878. He was graduated from Harvard University in 1901. Virtually his entire business career was confined to crude rubber brokerage. It began previous to 1904, in which year he opened a branch office in Akron as representative of George A. Alden & Co. and the New York Commercial Co.

In 1913 he represented in Akron the interests of Ed. Maurer, New York, importer of crude rubber. Later in the same year he incorporated with Fred S. Gove a new company for selling and dealing in crude rubber at 82 Beaver St., New York. Mr. French was president, and Mr. Gove vice president and treasurer of the organization, which was dissolved in October, 1920, when the brokerage firm of French & Handy was organized with offices at 347 Madison Ave., New York.

In 1923 this firm was dissolved and Mr. French organized the H. W. French Co., Inc., with headquarters in New York and branch offices in Akron, O., and as president of the concern, he conducted a successful crude rubber brokerage business.

He was a member of the Rubber Exchange of New York and represented rubber producing interests in the Far East. He made a trip to the primary rubber markets a few years ago in the interests of his company. Harold W. French was a man of sterling character, highly esteemed socially and by his business associates. He is survived by his widow and one son, who have the sympathy of a wide circle of friends in their loss.

Mr. French was a member of the Harvard Club of New York; the University Club of New York; Scarsdale Golf Club; the Midyork Club; and Sons of the American Revolution.

Funeral services were held on May 23 from his late residence, 10 Woodland Place, White Plains, N. Y. Burial was in Canton, Mass.

Veteran Rubber Man

AS the automobile in which he was riding crashed into a speeding train, Justus William Matthaei, superintendent of the Bay City Rubber Corp., Bay City, Mich., and his two companions were instantly killed on April 29.

J. W. Matthaei

Mr. Matthaei was born in Marburg, Germany, fifty-two years ago and received his education in the high schools and university of his native city. His connection with the rubber industry began in 1900 when he worked at the Lichterfelde hard rubber factory in Berlin.

He came to the United States in 1909. The next year he joined the laboratories of the United States Rubber Co., severing that connection in 1916. After six years as superintendent of the Armstrong Cork Co., he found a similar position with the Endicott Johnson Corp., Johnson City, N. Y. While there he equipped and operated a complete rubber sole and heel plant. The Panther Rubber Co. next engaged him as superintendent for several years. During the last two years he was with the Bay City Rubber Corp.

Mr. Matthaei is survived by his widow, two sons, and a daughter. The sincerest sympathy of the trade is extended them in their bereavement.

A Midwestern Pioneer Tire Man

BYRON C. DOWSE, one of the pioneers of the rubber industry, passed away on May 7 at Chicago, Ill., and was buried on May 10 at the old family burying ground near Kenosha, Wis. His rubber experience dates back to the bicycle days, beginning in 1895 with Gormley & Jeffrey Mfg. Co., which sold its patents in the clincher tire to the Indianapolis Rubber Co., Inc., Indianapolis, Ind. He joined this company, which was later taken over by the Rubber Goods Co., and the name changed to the G & J Tire Co.

Mr. Dowse was made president of the company in 1907 and continued in that capacity until 1911, when he formed a company and purchased the plant at Cudahy, Wis., known as the Federal Rubber Co., which was changed to the Federal Rubber Manufacturing Co. Mr. Dowse was elected president of that company also and continued in that office until 1916. From 1916 to the date of his death he was engaged in the manufacture of automobile accessories in Chicago, Ill.

Mr. Dowse is survived by his wife, Nathene William Dowse, and three sons, Kenneth, Donald, and Robert, also his mother, Mrs. W. P. Dowse, and his brothers, Ralph, Clarence, and Paul, who were associated with the rubber industry for a number of years.

Paymaster for Stokes Rubber Co.

JOSEPH W. HESS, of 69 N. Stockton St., Trenton, N. J., for nine years paymaster for the Joseph Stokes Rubber Co., died at the McKinley Hospital, Trenton, on May 4 after a lengthy illness. Mr. Hess had been formerly employed by the Hamilton Rubber Manufacturing Co.

Born in Lancaster County, Pa., he moved to Trenton as a boy to enter a business college. He later joined the rubber industry. Mr. Hess, who was 54 years old, was an active member of the Manufacturers' Council, Chamber of Commerce, Mercer Lodge, Free and Accepted Masons, Trenton Consistory, Scottish Rite, and Crescent Temple, Order of the Mystic Shrine.

He is survived by his parents, a brother, and a sister, all residing in Lancaster, Pa. Interment was in Manheim, Pa.

Well-Known Rubber Man

ABRAM M. SAWYER, 68, of 286 Bellevue Ave., Trenton, N. J., died on May 6 at his home after a brief illness. He was one of the best known men in the rubber industry in this section. Mr. Sawyer went to Morrisville, Pa., as a foreman in the curing department in the Vulcanized Rubber Co. forty-two years ago. He was a recognized authority in all things pertaining to hard rubber, serving as superintendent of the Vulcanized company for twenty years, prior to his election to the board of directors and promotion to the post of general manager fifteen years ago. He saw the factory grow under his administration from one employing forty men to one of the largest in the country, employing over 450 men. He was retired a few years ago.

Mr. Sawyer is survived by two daughters, three sons, and ten grandchildren. He was an ardent churchman and for years was president of the St. Vincent De Paul Society of the Sacred Heart Church and an honorary member of the Catholic Club. He was a member of the Holy Name Society of St. Mary's Cathedral, Trenton Council, No. 355, Knights of Columbus, Trenton Lodge of Elks, and Mount Carmel Guild. Burial was at Trenton.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country
†44,844	Shoes and inflated toys	Rio de Janeiro, Brazil
†44,856	Rubberized fabrics, surgical, pharmaceutical and sanitary goods	Milan, Italy
†44,876	Tires	Montevideo, Uruguay
†44,887	Bathing shoes, overshoes, balloons, sponges, etc.	Chemnitz, Germany
*†44,888	Toilet brushes	Bombay, India
*44,893	Packings	Kuala Lumpur, Straits Settlements
†44,881	Toys and dolls	Johannesburg, South Africa
†44,894	Conveyer belts	Stockholm, Sweden
†44,915	Tires	Vienna, Austria
*†44,916	Sponge rubber articles	Aix la Chapelle, Germany
*†44,949	Tires	Canton, China
*45,019	Footwear	Quebec, Canada
*45,020	Combs	Hamburg, Germany
*45,025	Bathing caps, balls and novelties	Lourenco Marques, Portuguese East Africa
*45,106	Bands	Rotterdam, Netherlands
†45,107	Bathing and sport shoes and balloons	Amsterdam, Netherlands
†45,108	Bathing caps, gloves, diapers, etc.	Oslo, Norway
‡45,117	Gloves, garden hose, tires, and tubes	Liverpool, England
†45,123	Footwear	Amsterdam, Netherlands
†45,124	Shoe findings	Copenhagen, Denmark
*†45,135	Bathing wraps and raincoats	Johannesburg, South Africa
†45,176	Coal drawing transport straps	Moravska Ostrava, Czechoslovakia
*45,178	Tires	Brno, Czechoslovakia
†45,180	Canvas shoes	Prague, Czechoslovakia
*45,182	Felt	Buenos Aires, Argentina
*†45,238	Medical, pharmaceutical and dental articles, toys, specialties, and fabrics	Paris, France
*45,280	Tires	London, England
*45,281	Bands	The Hague, Netherlands
*†45,322	Soles	Paris, France
*†45,352	Dish washing scraping block	Montreal, Canada
†45,353	Boots, bathing and tennis shoes	Habana, Cuba
*†45,354	Transmission belting	Warsaw, Poland
†45,359	Toys and balloons	Alexandria, Egypt
*45,368	Packings and insulators	Offenbach, Germany
*45,369	Overshoes	Mukden, China
†45,370	Belting	Oslo, Norway
‡45,476	Tennis and overshoes	Milan, Italy
†45,498	Galoshes	Chemnitz, Germany
*†45,501	Pharmaceutical, medical, and dental goods	Paris, France
†45,508	Bathing caps and shoes	Rome, Italy
†45,509	Automobile top material	Mexico City, Mexico

*Purchase. †Agency. *†Purchase and Agency. ‡Either.

Henry L. Pike

ON May 13, Henry L. Pike, a member of the firm of Converse & Pike and formerly connected with the Converse Rubber Co., Malden, Mass., died at his home, 16 Garden St., Medford, Mass. He was born in Chelsea, Vt., and spent his boyhood at Cornish, N. H.

Funeral services were held on May 15 in the vestry of the Mystic Congregational Church, Medford. Surviving Mr. Pike is one daughter.

Blue Ray Non-Actinic Paint

It is a matter of familiar experience that rubber cured or uncured is destroyed by continued exposure to direct sunlight. Therefore it has long been the practice in rubber factories to protect crude rubber from the sun's rays especially when it has been washed and hung in a drying loft. The protective means employed are to prevent the direct entrance of sunlight by placing dark colored shades at the loft windows.

A special preparation known as Blue Ray has been developed to be painted on the inside of windows to exclude the actinic rays of sunlight. The material is not soluble in water after thorough drying but can be removed with a 20 per cent water solution of acetic acid. It is easily applied by brush like any paint and is highly non-actinic. The paint has a spread of about 500 square feet of glass per gallon and has no etching effect.

Mapico Rubber Colors

Mapico iron oxides, manufactured by patented processes, are extremely practical in rubber compounds because of their fineness and freedom from impurities, besides being very light and flocculent.

Mapico reds can be obtained in various shades, ranging from deep blue undertone to light pink. Since they are free from all impurities such as manganese and copper, they can be used in rubber compounds without fear of harming or retarding the cure. While all of these reds are extremely fine, some of the brightest may even be considered colloidal.

Mapico browns are used in tiling and footwear compounds. They are more economical than natural earth colors, owing to their remarkable coloring power, and also they are finer than the average run of natural pigments. The use of these browns in place of various mixtures to obtain a brown shade lessens the possibility of streakiness and "dirty" colors.

Super Mapico yellow finds favor in rubber compounds replacing ochres and other natural oxides. This yellow is more economical because of its coloring power, and also its fineness and flocculency. It is employed in tiling, footwear, and rubber insulating compounds. This color, too, may be considered colloidal.

The Rubber Industry in Europe

GREAT BRITAIN

R. G. A. Annual Meeting

The regular general meeting of the Rubber Growers' Association Inc., was held on April 11 in London. G. H. Masefield, the presiding officer, spoke briefly on the work of the Cooperative Selling Committee and the new Department of Commercial Research, which will collate and tabulate statistics relating to the industry.

Concerning the tapping holiday, the president said that the response had been extraordinarily good. Assents from producers in the United Kingdom representing 90 per cent had been obtained; from Dutch and other European producers, excluding British, operating in the Netherlands East Indies, 91 per cent; and from Malayan local European companies, 79 per cent. The only disappointing feature was the poor response from the local European companies in Ceylon. On the other hand, the response from the Asiatic producers of Malaya had been surprisingly good.

Mr. Masefield discussed the future of rubber production and believes that this will be more influenced by the question of disease than is generally realized.

"Hitherto the great disadvantage of rubber, from the European producers' point of view," he said, "is the extreme ease with which the tree can be grown and the wonderful powers of recuperation from bad treatment. This is often the case with a new product, but it will be found that eventually rubber will become a more delicate tree, accentuated by the high yielding strains which are already more susceptible to disease than the hardy but poorer yielding stocks. . . . . In my opinion the longer the price remains at the present unremunerative level, the greater the ultimate risk from disease is likely to become."

The retiring vice president, J. G. Hay, was elected president for the ensuing year. Mr. Hay joined the Council of the Rubber Growers' Association in 1923 and for many years served on a number of committees. He is managing director of Guthrie & Co., estates agents and secretaries, representing nearly 130,000 acres of planted rubber. Herbert Wright, who was elected vice president, has been on the Council of the Rubber Growers' Association since 1907 and is an experienced rubber planter.

The Dunlop Rubber Co.

The annual report of the Dunlop Rubber Co., Ltd., shows, net profits of £2,307,350, after provision for depreciation, for the year ended December 31, 1929. A dividend of 9 per cent on the common stock was proposed, making a total of 15 per cent for the year. Net profits in the preceding year were £1,359,893, and the dividend represented 20 per cent, while a sum of £1,500,000 was withdrawn from reserve to meet losses on stocks owing to the removal of rubber restriction. In 1927, 1926, and 1925 the profit and distribution had been, respectively, £2,793,951, £2,711,419, and £3,207,611 and 25, 20, and 15 per cent. In each case preferred dividends on the cotton subsidiary had been reserved first.

Taking into consideration general trade conditions, particularly during the latter half of the year under review, the results are regarded as very good. The volume of the company's business at home and abroad continues to be satisfactory, and the high standard of efficiency both with regard to quality and costs is as usual on the upward grade. Owing to the heavy duty on tire cord in France the company has decided to produce its specialized cord in the French factory at Montlucon.

Distribution of Rapson Tires

F. Lionel Rapson, Ltd., has appointed the North British Rubber Co., Ltd., London, sole distributer of the Rapson tires to the trade. Rapson tires will no longer be sold on a cash basis but on the usual North British terms and conditions. Discounts from the list to retailers for both North British and Rapson tires are 15 and 10 per cent, with cash discounts of 5 per cent on payments made within seven to ten days, and 2½ per cent on payments made within one month.

Lower Production Cost

The rubber industry will not be served by restriction of output, but by lowering costs of production, is stated by H. J. Welch, chairman of the Rubber Plantations Investment Trust, the largest holding company of British producers.

The United States will absorb 470,000 tons this year, the same as in 1929, while the rest of the world will consume 360,000 tons, or 30,000 tons more, making a total of 830,000 tons. If these views are confirmed, production and consumption should about balance.

Reliance Rubberware in Voluntary Liquidation

A statement of Reliance Rubberware, Ltd., now in voluntary liquidation, showed liabilities of £41,503. The assets totaled £174,220 and were expected to realize £74,449. The company was registered in 1928 with a capital of £125,000 to take over the business of the Reliance Rubber Co., Ltd., at Formosa St., Paddington. A number of retail stores were acquired but these proved to be failures and were closed. A balance sheet prepared to December 31 last, showed a trading loss of £19,870. In addition the capital expenditure since its formation had been £82,364. The capital raised by the issue of shares was £79,800, and to provide for the expenditure, £25,000 had been borrowed from the bank, which had been pressing for payment of the loan for some time past.

Airplane Mountings

India Rubber Journal calls attention to the two types of rubber insulated mountings for airplane engines that are now in use. The first insulator is primarily intended for radial engines, in which each of the radial fixing bolts is supported by two conical molded insulators placed in mild steel caps welded to the engine plate. The air screw thrust reaction is transmitted to the machine through the rubber, and any vertical or radial loads such as those encountered during landing or quick manoeuvring are taken directly through the rubber with a consequent reduction of the shock load.

The second type consists of a main steel cylinder containing a rubber block having a central hole through which passes the engine retaining bolt. The engine bolt nut can be screwed down to place any desired compression in the block, and clearance holes are provided to insure that the bolt and nut will not make contact with the metal casing.

This unit, it is pointed out, is not so neat as the American type but is simpler to manufacture and cheaper, since no difficult molded rubber parts are necessary and the metal parts are also cheaper to produce. In addition there is the possibility of marketing a complete unit, while in the first type the metal mountings are incorporated with the engine plate.

Trade Notes

The London & Provincial Rubber Co., Ltd., London, E.1., is to be merged with Wm. Warne & Co., Ltd., London, E. C. 2.

The India Tire & Rubber Co., Ltd., has opened new office buildings and extensions at the works at Inchinnan, near Renfrew. J. H. Thomas, Lord Privy Seal, performed the opening ceremony.

Jas. Lyne Hancock, Ltd., is equipping a new plant for the purpose of waterproofing.

The Dunlop Rubber Co.'s new tire service station in Liverpool is claimed to be the finest in the United Kingdom. It has three garages, magnificent tire fitting section, service department, and space for 25,000 tires.

The McKenna Duties are to be retained in Mr. Snowden's Budget and will bring in a revenue of approximately £10,000,000, which under present circumstances the country can ill do without.

GERMANY

Exports and Imports

Exports of German rubber goods in the first quarter of 1930 showed an increase as compared with the corresponding period of 1929, although the rise in quantity is appreciably greater than in value, the figures being 60,921 quintals, value 31,583,000 marks, against 52,160 quintals, value 30,381,000 marks. The imports of manufactured rubber, on the other hand, show a slight decrease: 20,047 quintals, value 10,225,000 marks, in the first three months of 1930, and 21,200 quintals, value 11,017,000 marks, in the 1929 period.

Imports of crude rubber decreased considerably during the period under review when the total arrivals came to 129,933 quintals, value 20,976,000 marks, as against 145,753 quintals, value 28,211,000 marks, in 1929. Reexports were 9,549 quintals against 4,418 quintals, so that consumption during the first quarters of 1930 and 1929 was 120,384 and 141,335 quintals respectively.

Business Conditions

Reports from the Chambers of Commerce of Frankfurt a.M., Hanau, Fulda, Wiesbaden, Dillenburg, Limburg, and Wetzlar state that production and employment in the first quarter of 1930 were fairly satisfactory owing to a fair demand for goods. Demand for tires improved, especially for giant pneumatics, a recent line, and it is expected that as the season advances, other types of tires also will be more active.

The Selling Organization of German Rubber Thread Manufacturers, however, reports that business during the January-March period of 1930 was generally unsatisfactory because of bad conditions in the textile industry. In a number of factories part-time schedules had to be introduced. The outlook is uncertain.

Continental Gummi-Werke

Despite generally adverse conditions, the year 1929 was fairly satisfactory, reports the Continental Gummi-Werke A.G. The amalgamations with the Excelsior, Peters Union, and Polack-Titan concerns have already proved advantageous, although it will take time for the full effect to be felt.

The factories and the management remain under a central organization of the Continental Gummi-Werke A.G.; it was considered advisable to establish a number of new selling organizations under the names Continental Caoutchouc Compagnie, G.m.b.H., Excelsior Gummi-Compagnie, G.m.b.H., Peters Union, G.m.b.H., Polack-Titan Gummigesellschaft m.b.H., and Mittelland Gummi-G.m.b.H., which will undertake all sales work for the factories in Hannover, Hannover-Limmer, Frankfurt a.M., Waltershausen, and Corbach. To reduce overhead, in the different cities all the branches of the selling companies will be housed together.

The company reports an increase in sales for 1929, both at home and abroad, although the value of the home sales declined; this, however, was more than offset by increased profits from exports. Business with both the bicycle and the automobile industries, the chief outlets for the company's products, suffered from the unfavorable conditions in Germany, and sales of cycle tires on the home market consequently decreased. But sales of automobile tires increased. The report complains that motorization in Germany is not advancing so rapidly as in other countries. At the same time, the productive capacity of the German tire industry is considerably ahead of German requirements. For these reasons the efforts of foreign firms to increase their share in the German market by expansion and new establishments is regarded with some anxiety. However, the concern feels capable of maintaining its dominant position.

Gross profits during 1929 were 24,797,653.22 marks, and net profits 4,044,800 marks. Dividends of 5 per cent on the preferred and 9 per cent on the common shares were proposed.

Hard Rubber Cos. Combine

It is officially announced that merger negotiations between the New York-Hamburger Gummi-Waaren-Compagnie and the firm of Dr. Heinr. Traun & Sohne, vorm. Harburger Gummi-Kamm-Compagnie, so far have been successful. A preliminary contract has been made, and the New York-Hamburger Gummi-Waaren-Compagnie soon will take over the Traun works. Until further notice, operations by the latter will continue as usual. It is planned to reorganize manufacturing to reduce costs. The two concerns specialize in manufacturing hard rubber goods, and their output includes combs, molded parts for technical, electro-technical, and surgical purposes, radio accessories, acid and alkali-proof linings.

Kolloid-Gesellschaft

The eighth annual general meeting of the Kolloid-Gesellschaft takes place in Frankfurt a.M. from June 9-11. The main subjects will be organic and colloid chemistry. A large number of papers have been announced including some from K. H. Meyer, H. Staudinger, H. Mark, W. Pauli, K. Hess, M. Bergmann, R. O. Herzog, R. Pummerer.

Kautschuk Gesellschaft

The Deutsche Kautschuk Gesellschaft will hold its fourth annual general meeting from June 15-17 in Frankfurt a.M. So far, the following will read papers: A. van Rossem, of Delft, Holland; Paul Bary and F. Jacobs, of Paris, France; H. Mark and E. Valko, Ludwigshafen; W. Lindemann, Berlin; P. Schidrowitz, London, England; A. A. Somerville, New York, N. Y., U. S. A.; E. Grenquist, Springfield, Mass., U. S. A.; E. A. Hauser, Frankfurt, a.M.; Dr. Heering, Koln-Deutz.

French Imports and Exports

The latest statistics available reveal a good demand for rubber goods in France in 1929. Imports of crude rubber, balata, and gutta percha increased over 40 per cent in quantity as compared to the preceding year, while rubber goods imports advanced more than 50 per cent. But two of the most important products of French manufacture, tires and footwear, showed decreased exports.

The total amount of crude rubber, balata, and gutta percha imported into France in 1929 was 745,467 quintals, against 526,740 quintals in 1928. The totals for imported manufactured goods were 68,391 against 45,026 quintals. These goods included rubber thread, 5,907 quintals; apparel and accessories of rubberized fabrics, 1,819 quintals; hard rubber and hard rubber articles, 1,412 quintals; tires and tubes, 36,372 quintals; footwear, 3,976 quintals; surgical goods 1,725 quintals. Over 25 per cent of the imports were from Belgium, 24 per cent from Great Britain, over 21 per cent from the United States, and 18 per cent from Germany. Imports from Belgium were 50 per cent higher in 1929 than in 1928, while those from Germany were more than 150 per cent higher in 1929 than in 1928. The participation of these two countries in French business has advanced steadily from year to year, without a setback since 1925 at least.

Rubber Goods Propaganda

Le Caoutchouc et la Gutta-Percha watches anxiously the growing imports of foreign rubber goods into France, and with a view to stimulating French enterprise in manufacturing various goods, publishes a list of products which could profitably be further developed in France. According to this authority demand is very good for rubber surgical wares, cut sheet, insulated cables and wires, imitation leathers for upholstery and soles, molded goods of hard rubber, hard rubber combs, other hard rubber goods, dental rubber, tennis balls, balata belting, etc. In the case of several items, as cut sheet, tennis balls, balata belting, etc., the French demand is much higher than the supply.

Rapson Tire Co.

The Melbourne Stock Exchange has been informed by the directors of the Rapson Tire & Rubber Co. (Australia), Ltd., that negotiations for its sale to the Dunlop-Perdriau Rubber Co., Ltd., have now progressed to the point where details only remain to be settled.

Cable Making in Australia

The manufacture of insulated wires and cables for electrical purposes will now be undertaken in Australia in consequence of the negotiations between the Cable Makers' Association, Dunlop-Perdriau Rubber Co., Ltd., and Metal Manufacturers Pty., Ltd.

The Rubber Industry in the Far East

NETHERLANDS EAST INDIES

Expectations of Increased Production

O. de Vries, who is leaving Java for good, was the speaker at the Soekaboemi and Rubber Planters' Association meeting held on March 22, 1930. His subject was: Practice and Experiment Station: Observations on the Work of the Rubber Experiment Station, and he pointed out the unwisdom of planters who advertise their expectations of increased outputs from selected planting material. This plays the planter tricks. The true significance of superior planting material has not escaped the American consumer, who is accustomed to the idea that rubber will shortly cost much less to produce and is influenced in his conception of a fair market price at present by this expectation of low costs in the future.

This is quite premature, for at present the total area planted with superior material is a small percentage of the total area under rubber. Even after five to eight years, when the high-yielding trees do give twice as much as ordinary trees, world production increase would be small when fluctuations from other causes are considered, for instance, from untapped native rubber areas. The increased outputs to be expected in the near future from the improved planting material are, therefore, of no practical importance as far as the market or the speculator is concerned, and it will be a long time before the effect of yields from the new material will be felt.

Producers, therefore, would be wiser to emphasize the fact that for many years to come they will continue to be tied to some millions of hectares of old rubber land instead of broadcasting boasts of inflated yield expectations; the only result of this is to turn the market against them.

As Mr. de Vries puts it, no one has yet seen a hectare in bearing which yields 2,000 kilos per hectare, let alone hundreds of thousands of hectares with such outputs. No one knows whether soil and climate would permit such outputs; yet producers indulge in talk that creates an undesirable impression on consumers.

Rubber Problems

Prof. de Vries then spoke of a series of tests now in progress at the Experiment Station, in connection with the stem in buddings. The difficulty in these tests is to obtain uniform and comparable material, and different methods of meeting this have had to be worked out as: combinations of clones, combinations of Hevea *brasiliensis* with other varieties—*collina, guyanensis, spruceana,* and *confusa;* the use of marcots; the use of double stems (where two stems grow on one root system); and finally the raising of so-called Siamese twins, that is two trees from one seed.

Another interesting point is deep tapping. The possible advantages of tapping deeply to reach the latex cells in the inner layer of bark is worth the attention of planters and scientists.

Sumatra in 1929

The Commercial Association of Medan publishes figures concerning Sumatra crops every year, and now the 1929 figures have been issued. This data is provisional and subject to correction. Figures for the years up to 1928 are official, but those for 1929 are partly based on data from companies and partly on estimates, the totals probably erring slightly on the low side. The total area under rubber in East Coast Sumatra and East Coast of Atjeh in 1929 was 251,000 hectares, which compares with 242,209 hectares in 1928, 221,729 in 1927, 202,596 in 1926, 188,875 in 1925, and 179,893 in 1924. The development of the rubber planting industry in these territories shows a steady rate of progress during the period 1924-1929.

In 1929 it was found that the areas were distributed among the various nationalities as follows:

Nationality	Planted Area Hectares	Productive Area Hectares	Output Kilos	Output per Hectare Kilos
Dutch	92,071	52,456	23,179,833	442
British	74,775	53,956	18,578,454	344
American	37,882	29,265	16,814,518	574
Franco-Belgian	29,982	18,867	7,679,518	407
Japanese	7,969	6,279	2,165,496	345
German	2,287	1,924	771,745	401
Swiss	2,530	1,926	811,898	422
Others	3,504	2,578	895,141	347
Total	251,000	167,251	70,896,603	422

Since the total Netherlands planted area was 83,454 hectares at the end of 1928, the greater part of the increase for 1929 was due to Dutch capital. This was also the case in the preceding year. The British area showed no increase for 1929, nor did the Franco-Belgian; on the other hand, the American share has advanced considerably.

As shown above, the average yield per hectare for 1929 was 422 kilos, which is a slight increase over the average of 415 for 1928 as given by the Central Bureau of Statistics. It is worth noting that the American output per unit of area again increased considerably during 1929 when the figure was 574 kilos per hectare, while in 1928 it was 557 per hectare. No other group has recorded outputs per unit of area that are in any way comparable with these figures.

Native Rubber Obstacle to Restriction

It is recognized that the main obstacle in the way of adequate restriction of rubber is native rubber. Many feel that nothing can come of any restrictive measure that leaves out the native producer. It is also realized that to convince native producers of the need for restriction and get them to join voluntarily is impossible. Moreover, the government cannot make propaganda for restriction among the natives, much less attempt to enforce it without stirring up bad feeling.

In the *Indische Mercuur,* M. B. Smits, head of the Division of Agricultural Economy, of the Department of Agriculture, Industry, and Commerce, N. E. I., suggests a restriction plan for native rubber which is remilled before being marketed. The writer asks why this rubber could not be restricted by appealing to the remillers. Now the remiller pays little attention to price, seeing that if the price is low for his finished product, he also pays a comparatively lower price for his raw material; nevertheless a stable price is not without interest to him. Owing to the keen competition among remillers the margin of profit is small, and close figuring is essential. This, of course, is difficult when prices fluctuate widely.

The extent of underhand dealings by small outside remillers would be curbed in the Dutch Colonies by the law requiring remillers to obtain permits for establishing factories. The government could refuse to grant new permits for the duration of restriction, while a similar law could be introduced in Malaya. Then, adds the writer, the only way excess native rubber could be marketed would be in the shape of unworked slabs, which might be bought by a few Americans and possibly Japanese consumers.

Such a scheme might work, but would not some interested party hint to the native producer that if he would prepare his rubber carefully, he could sell it without benefit of the trader and remiller? Since it has already been noted by investigators that the preparation of native rubber is improving, the native planter might not need much of a hint.

Ferguson's Rubber Works (PTY), Ltd., 26 Ussher Industrial Sites, Booysens Rd., Johannesburg, South Africa, rubber manufacturer and vulcanizer, is the second rubber manufacturing company in that country. The firm recently changed its name slightly because after the death of its principal, G. W. Ferguson, his widow, who had been in the business with him for several years, in continuing the works found that it was advisable to form a private liability company.

MALAYA

Colonial Secretary Proposes Relief Measures

A stir has been created by the following letter sent to various public bodies by the Colonial Secretary, suggesting measures of relief for the rubber industry.

"I am directed to inform you that representations have been made to this government that in view of the serious depression of the rubber industry it should appoint a committee to consider ways and means of assisting the industry.

"I am to inquire whether your Association, Society, or Chamber considers that the appointment of such a committee could have any useful results and if so to request it to put forward suggestions as to the composition of the committee and the lines which its investigations should follow.

"In this connection I am to state that the following suggestions for assistance to the industry have been made:

"(a) Waiving or reducing export duties and the quit rent on rubber lands during the present slump until such time as the price of rubber shall have improved to an economic figure.

"(b) Levy export tax in kind on sliding scale based on price of rubber to be placed at government's disposal for new uses or other purpose."

This letter was sent to both the Planters' Association and the Asiatic Planters' Association of Malaya, to the European and Chinese Chambers of Commerce in the S. S., but not to the Chambers of Commerce in the F. M. S. It is interesting to note that no such representations as are embodied in the letter have been made to the Federal Government either by the Straits Government or by the planting associations. However, the new governor, Sir Cecil Clementi, is understood to be giving the question of rubber his serious attention.

Asked for his views by a *Straits Times* representative, E. N. T. Cummins, chairman of the Planters' Association of Malaya, said that the F. M. S. Government could assist the industry by protesting against the new scale of rubber duties. However, his main hope was in the May stoppage of tapping. Once this had been carried through, he thought it very probable that the Sunday holiday would meet with a generally favorable reception.

Tapping Holiday

There is much speculation as to the results of the May tapping holiday. It is hoped that in the effort to find work for coolies during the period, producers will not set them to collecting ground scrap. Since many estates have stopped collecting this grade, there must be quite an accumulation on the estates, and it is suggested that native holdings would yield a large amount. Estates may seize the opportunity to clean up these lower grades, without realizing it would indirectly help to defeat the object of the May stoppage.

Since the scheme is purely voluntary, the maximum tonnage likely to be taken off the market by the measure would not be more than 25,000 tons, or 3 per cent, while on the other hand all companies remaining idle during May could look for an increase of 5 per cent in the June-July outputs.

The chief reason for attaching importance to the measure is that a scheme has been worked out which has the cooperation of Dutch and British. It is a step in the right direction, and all are agreed that the strength of the scheme lies in that it has received the support of the Dutch, Ceylon, Burma, Indo-China, and large Asiatic interests. The ideal of international cooperation has been at last achieved.

What will be the next step is problematical. The government has taken the initiative in suggesting an inquiry and has intimated pretty clearly that it would not lend a deaf ear to representations made for assistance in relieving the situation. It is predicted that not long after the May stoppage a scheme for a more permanent form of restriction will be evolved. However, the opinion of many is that no plan lacking government sanction can be wholly successful.

To resume, the points to be considered in the rubber situation are the move toward cooperation among the rubber producers, the growing desire for government intervention, and the intimation on the part of the local government of its willingness to assist the rubber industry.

Hevea Cuttings

Referring to *Straits Times* comments on a new book by F. Summers, it is stated by W. Dunman that over a year ago he corresponded with Mr. Summers, of the Rubber Research Institute, suggesting planting isolated areas with cuttings from the highest yielding mother trees. To this the reply was that cuttings would not grow. Whereupon Mr. Dunman pointed out that he had ten-year-old trees now being tapped, grown from cuttings. This elicited the reply that such trees would not grow tap roots. Then Mr. Summers had to be informed that since the land is below sea level at the Grove Estate, water was reached at three feet, and consequently not a single tap root was on the whole estate; nevertheless a yield of 600 pounds per acre was being obtained. Continuing, Mr. Dunman gave as his opinion that isolation planting with cuttings from the highest yielding mother trees seemed to be the best method of obtaining high grade selected seed.

Latex Paste Patents

Recently it was reported in these columns that a petition filed by V. K. Singham for the revocation of a patent in regard to latex paste (Federal Patent No. 119 of 1924) had been dismissed. It is now learned that the Legal Adviser, Federated Malay States, after due consideration of the evidence submitted by Mr. Singham has agreed with him to present a fresh petition for revocation in his behalf.

Yields of Rubber Producing Centers

In view of the discussion called forth by the high yields from Malaya and Ceylon in 1929, the Department of Commerce, Washington, D. C., has worked out some interesting figures to show how these figures compare with previous yield records. For this purpose, figures of annual exports from the different producing centers from 1916 to 1929 inclusive have been taken and these annual exports (in pounds) have been divided by the total acreage of 6-year-old rubber for the years 1910-1923 inclusive. Although the figures obtained show wide annual fluctuations, the figure of 434 pounds per acre obtained for Malaya in 1929 exceeds all previous records, the nearest figure being 416 pounds per acre in 1919. For the Netherlands East Indies (estate and native rubber combined) the highest figure was 375 in 1925, the 1929 figure having been 372. Ceylon ranks second after Malaya with 402 pounds per acre in 1929. During the last four restriction years the Ceylon exports per acre were noticeably above those from Malaya.

In the accompanying table the exports per acre are shown on the basis of a three-year running average for the period 1917-1928, which gives a much closer approximation of the annual production rate. From this table the upward trend in yield per acre of the countries outside of Malaya and Ceylon is clearly seen. Judging from the figures, Malaya's output per acre before 1920 was much higher than that of any other country; consequently if the rate of increase in Malaya and Ceylon has been comparable to that in the other rubber producing areas, their 1929 figures should not appear abnormal.

This table shows that a sustained annual yield of around 400 pounds per acre has never occurred in the past.

THREE-YEAR RUNNING AVERAGE EXPORTS PER ACRE OF MATURE RUBBER

Year	Malaya Pounds	Ceylon Pounds	Neth. E. I. Pounds	India Pounds	Br. Borneo Pounds	Indo-China Pounds	Siam Pounds	Average Price Cents
1917	339	214	254	121	188	78	...	72.2
1918	350	261	290	128	218	108	...	60.2
1919	335	275	289	135	223	139	...	48.7
1920	335	319	286	132	219	179	...	36.3
1921	311	311	269	114	207	195	89	16.3
1922	285	275	297	110	235	214	153	17.5
1923	257	248	324	122	256	237	225	29.5
1924	231	223	354	152	278	247	300	26.2
1925	242	251	352	169	271	244	264	72.5
1926	250	275	346	188	286	251	278	48.5
1927	272	294	348	191	292	251	238	37.7
1928	324	360	366	200	299	252	228	22 [e]

Rubber Patents, Trade Marks and Designs

Machinery

United States

1,751,803.* **Inner Tube Mold.** This provides means for clamping and releasing each mold of a group so that time and labor required to insert and remove the tube are greatly diminished. T. L. Fawick, Racine, Wis.

1,751,869.* **Continuous Vulcanizing Apparatus.** The chief objects of this invention are to hold the mold sections together without mechanical clamping means and to economize time in the vulcanizing operation. R. Mayne, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,752,136.* **Tire Shaper.** This device shapes pulley bands into tire casing forms ready to receive the airbags for vulcanizing. It is opened automatically for the removal of the shaped casing and also similarly closed after the casing has been removed. A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Mich.

1,752,569.* **Vulcanizing Press.** This is especially adapted for vulcanizing inner tubes and affords ease of removal and replacement of the tubes. T. Midgley, Hampden, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,752,875.* **Solvent Recovery Apparatus.** An effective apparatus is provided applicable to rubber and other plastic spreading machines for recovering solvent from rubber applied to fabrics. E. A. Abeles, New York, N. Y.

1,753,299.* **Tube Trimmer.** This machine trims the ends of uncured rubber tubes, while supported upon mandrels, and prior to subsequent wrapping, rolling, and vulcanizing. W. Nicholas, assignor to Black Rock Mfg. Co., both of Bridgeport, Conn.

1,753,973.* **Tire Building Apparatus.** This relates more especially to mechanism for "setting" or positioning tire beads upon the respective marginal portions of a tire carcass during manufacture. F. Slusher, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

* Pictured in group illustration.

1,754,273.* **Tire Building Drum.** This involves a novel collapsible principle allowing for better operation and is simple to make and maintain. V. Karbowski, Idaho Springs, Colo., and W. C. Smith, Des Moines, Ia., assignor to Lake Shore Tire & Rubber Co., Chicago, Ill.

1,754,502.* **Inner Tube Apparatus.** This continuously operating machine is associated with a rubber mill from which a sheet of rubber is continuously delivered and formed into hollow annular tubes. H. A. Denmire, assignor to General Tire & Rubber Co., both of Akron, O.

1,755,065.* **Tube Stripping Machine.** This machine is both automatic and positive in operation and rapidly removes tubes from the mandrels upon which they have been formed. H. T. Kraft, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,751,575. **Gum Stock Trimmer.** J. H. Davidson and R. S. Wade, assignors, by mesne assignments, to Hood Rubber Co., Inc., all of Watertown, Mass.

1,751,597. **Tire Tread Expander.** J. E. Perrault, Watertown, and H. G. Ellis, Waltham, assignors, by mesne assignments, to Hood Rubber Co., Inc., Watertown, all in Mass.

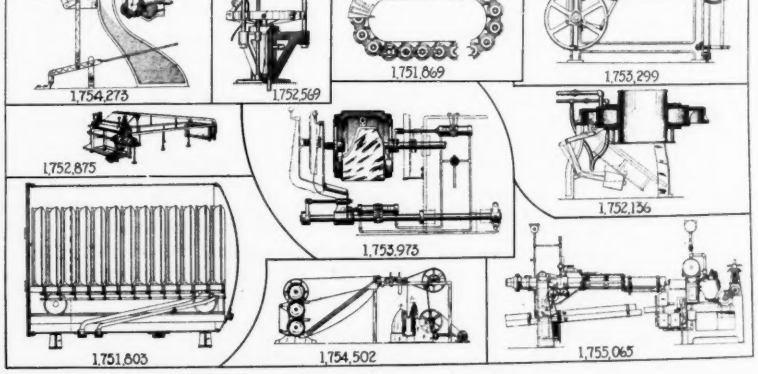
1,751,844. **Extruding Machine.** G. H. Schanz, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,751,873. **Tire Building Tool.** C. J. Merz, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,752,471. **Extrusion Machine.** B. M. A. Trebes, Oak Park, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,752,829. **Tire Repair Vulcanizer.** J. Q. Adams, assignor to Adams-Barre Co., both of Columbus, O.

1,753,035. **Tire Casing Spreader.** G. E. Weaver and E. W. Kelley, assignors to Weaver Mfg. Co., all of Springfield, Ill.



1,753,041. **Pneumatic Tire Grommet.** P. M. Bourdon, Paris, assignors to Michelin et Cie., Clermont-Ferrand, both in France.

1,753,174. **Strip Pulling Device.** R. F. Russell, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,753,175. **Tire Tester.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,753,176. **Article Drier.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,753,177. **Bending Machine.** W. C. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,753,305. **Tire Flap Punch.** H. J. Spalding, Akron, O.

1,754,177. **Reclaiming Device.** A. Mrach, assignor to Societa Italiana Pirelli, both of Milan, Italy.

1,754,535. **Latex Purifier and Concentrator.** W. B. Wescott, assignor to Rubber Latex Research Corp., both of Boston, Mass.

1,754,575. **Repair Vulcanizer.** A. W. Scharpf, La Crosse, Wis.

1,754,583. **Tire Builder.** W. E. Swern, Kokomo, Ind., assignor to Goodyear Tire & Rubber Co., Akron, O.

1,754,629. **Web Guiding Apparatus.** R. S. Kirk, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,754,993. **Hard Rubber Article Sizer.** F. Fenton, assignor to Miller Rubber Co., both of Akron, O.

1,755,038. **Mold Maker.** J. E. Tition, Kenmore, assignor to Miller Rubber Co., Akron, both in O.

Dominion of Canada

298,786. **Hose Apparatus.** H. Pahl, Düsseldorf-Rath, Germany.

298,880. **Band Splicing Press.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of G. B. Nichols and R. F. Russell, both of Akron, O., U. S. A.

298,881. **Tire Shaper.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of H. D. Stevens, Akron, O., U. S. A.

298,882. **Tire Builder.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of H. D. Stevens and E. D. Putt, both of Akron, O., U. S. A.

298,887. **Mold Cleaner.** Goodyear Tire & Rubber Co., Akron, assignee of H. J. Hoenes, Cleveland, both in O., U. S. A.

298,891. **Stitcher Disk.** Goodyear Tire & Rubber Co., assignee of R. E. Jenkinson, both of Akron, O., U. S. A.

298,901. **Hollow Article Device.** Ioco Rubber & Waterproofing Co., Ltd., assignee of J. Kirkwood, both of Glasgow, Scotland.

299,018. **Tire Vulcanizer.** J. R. Gammeter, Akron, O., U. S. A.

299,324. **Molding Apparatus.** Dunlop Rubber Co., Ltd., London, S.W.1, assignee of H. Willshaw, H. Smith, and F. G. Broadbent, all of Birmingham, England.

299,558. **Tire Shaper.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. O. Abbott, Jr., Detroit, Mich., U. S. A.

299,559. **Tire Tester.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of A. O. Abbott, Jr., Detroit, Mich., U. S. A.

299,560. **Fabric Coating Machine.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of J. McGavack, Leonia, N. J., U. S. A.

United Kingdom

324,317. **Temperature Controller.** Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

324,515. **Battery Box Press.** A. B. Mackey, Cleveland, O., U. S. A.

324,991 and 325,206. **Watch Case Vulcanizer.** J. Jones, Birmingham.

325,100. **Boot Vulcanizer.** A. A. Glidden and T. M. Knowland, both of Watertown, and H. L. Davis, Walpole, all in Mass., U. S. A.

325,228. **Tire Making Machine.** Firestone Tire & Rubber Co. (1922), Ltd., London. (Firestone Tire & Rubber Co., Akron, O., U. S. A.)

Germany

495,610. **Press.** The B. F. Goodrich Co., New York, N. Y., U. S. A. Represented by G. Benjamin, Berlin-Charlottenburg.

495,991. **Stirring Dispersions.** Anode Rubber Co., Ltd., London, England. Represented by W. Karsten and C. Wiegand.

495,993. **Dividing Masses.** C. W. Taylor, Watford, England. Represented by P. Wangemann and B. Geisler, both of Berlin, S. W. 57.

496,204. **Inflating Tubes.** W. G. Cumming, Montreal, P. Q., Canada. Represented by R. Scherpe, Berlin-Charlottenburg.

496,610. **Vulcanizing Apparatus.** Akron Standard Mold Co., Akron, O., U. S. A. Represented by G. Benjamin, Berlin-Charlottenburg.

496,925. **Device for Finger Cots.** E. Lindner, Wusterhausen a. d. Dosse.

497,206. **Making Colored Stripes.** Dunlop Rubber Co., Ltd., London, England. Represented by M. M. and R. Wirth, C. Weihe, H. Weil, all of Frankfurt, a. M., and T. R. Koehnhorn and E. Noll, both of Berlin S. W. 11.

Designs

1,111,481. **Glove Mold, Etc.** Firma Emil Becher, Grafenroda i. Th.

1,112,900. **Repairing Tubeless Tires.** Gummiwerke Fulda, A. G., Fulda.

1,114,485. **Tire Vulcanizing Apparatus.** C. A. Hefter, Berlin-Charlottenburg, 1.

Process

United States

1,751,546. **Ornamenting Sheet Rubber.** A. A. Glidden and F. D. Bean, assignors, by mesne assignments, to Hood Rubber Co., Inc., all of Watertown, Mass.

1,752,295. **Chair Cushion.** B. B. Felix, Chicago, Ill., assignor to Featheredge Rubber Co., Inc., a corporation of Ill.

1,752,695. **Packaged Ball.** M. B. Reach, Springfield, assignor to A. G. Spalding & Bros., Chicopee, both in Mass.

1,752,735. **Ball Manufacture.** J. R. Gammeter, Akron, O., assignor to A. G. Spalding & Bros., a corporation of N. J.

1,753,872. **Athletic Shoe.** L. L. Steed, Johnson City, assignor to Endicott Johnson Corp., Endicott, both in N. Y.

1,754,670. **Artificial Flower.** J. B. Crockett, assignor to Cambridge Rubber Co., both of Cambridge, Mass.

Dominion of Canada

298,864. **Rubber Article Manufacture.** Dunlop Rubber Co., Ltd., London, N.W.1, assignee of G. W. Trobridge, Birmingham, both in England.

299,392. **Assembling Golf Clubs.** A. G. Spalding & Bros. of Canada, Ltd., Brantford, Ont., assignee of E. J. Zoerb, Chicopee, Mass., U. S. A.

299,574 and 299,575. **Heat Treatment.** Industrial Process Corp., Albany, assignee of H. R. Minor, Ossining, both in N. Y., U. S. A.

United Kingdom

324,664. **Coating Fabric.** Dunlop Rubber Co., Ltd., London, and G. W. Trobridge, Birmingham.

324,959. **Carbon Manufacture.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

325,210. **Cable Insulation.** J. E. Allan and S. B. Freeman, both of Birkenhead.

Germany

495,168. **Floor Covering.** Continental Gummiwerke A. G., Hannover.

496,306. **Woven Rubber Stockings.** A. Scholer, Barmen.

Chemical

United States

1,751,724. **Resin from Gutta Percha or Balata.** A. B. Craven, Selby, England.

1,751,817. **Rubber Derivative.** W. N. Jones and H. A. Winkelmann, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,751,848. **Age Resister.** A blown product of petroleum distillate. H. A. Winkelmann, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,752,351. **Battery Sealing Compound.** Rubber 99 parts, sulphur 1 part. H. Rothenberg, W. Norwood, N. J., and S. L. Henken, Bronx, assignors to H. Hyman, Brooklyn, both in N. Y.

1,752,531. **Rubber Composition.** F. S. Malm, Chicago, Ill., assignor to Western Electric Co., Inc., New York, N. Y.

1,752,557. **Cement.** L. J. D. Healy, Milwaukee, Wis., assignor to Fisk Rubber Co., Chicopee Falls, Mass.

1,752,637. **Aircraft Covering.** I. M. Jacobsohn, Chicago, Ill., and S. Truscott, Birmingham, O.

1,753,018. **Treating Vulcanized Oils.** A. F. Owen, Jackson Heights, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,753,184. **Treatment of Guayule.** D. Spence, Norwalk, Conn., assignor to Intercontinental Rubber Co., New York, N. Y.

1,753,185. **Guayule Extraction.** D. Spence, Norwalk, Conn., assignor to Intercontinental Rubber Co., New York, N. Y.

1,754,010. **Accelerator.** A. Cambron, Tottenville, assignor to Roessler & Hasslacher Chemical Co., New York, both in N. Y.

1,754,827. **Waterproof Composition.** A. W. Holmberg, S. Orange, N. J., assignor to American Rubber Co., Boston, Mass.

1,754,842. **Concentrating Latex.** I. Traube, Berlin-Charlottenburg, Germany, assignor to Naugatuck Chemical Co., Naugatuck, Conn.

1,754,865. **Accelerator.** L. B. Sebrell, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,754,886. **Dispersed Vulcanized Rubber.** W. C. Geer, New Rochelle, N. Y., and H. L. Trumbull, Hudson, O., assignors to B. F. Goodrich Co., New York, N. Y.

1,755,069. **Airbag Interior Protection.** G. D. Mallory, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

Dominion of Canada

298,872. **Composition.** I. G. Farbenindustrie A. G., Frankfort-on-Main, assignee of O. Schmidt, Ludwigshafen-on-Rhine, both in Germany.

298,873. **Waterproof Composition.** I. G. Farbenindustrie A. G., Frankfort-on-Main, assignee of O. Schmidt, Ludwigshafen-on-Rhine, both in Germany.

298,886. **Rubber Conversion Product.** Goodyear Tire & Rubber Co., Akron, O., assignee of H. A. Bruson, Philadelphia, Pa., both in the U. S. A.

298,889. **Antioxidant.** Goodyear Tire & Rubber Co., assignee of A. M. Clifford, both of Akron, O., U. S. A.

298,890. **Accelerator.** Goodyear Tire & Rubber Co., assignee of J. Teppema, both of Akron, O., U. S. A.

298,970. **Puncture Sealing Composition.** I. Sender, assignee of J. Luts, assignee of G. L. Huysmans, all of Schaerbeek-Brussels, Belgium.

299,614. **Submarine Cable Insulation.** Western Electric Co., Inc., New York, N. Y., assignee of A. R. Kemp, Westwood, N. J., both in the U. S. A.

United Kingdom

324,375. **Concentrating Latex.** Dunlop Rubber Co., Ltd., London, E. A. Murphy and D. F. Twiss, both of Birmingham.

324,489. **Vulcanizing Rubber.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

324,545. **Cold Vulcanization Under Pressure.** F. W. Farr, Northampton.

324,651. **Latex Coagulation.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.)

324,663. **Treating Latex.** H. D. Elkington, London. (Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij, The Hague, Holland.)

324,664. **Impregnating Fabrics.** Dunlop Rubber Co., Ltd., London, and G. W. Trobridge, Birmingham.

324,859. **Carbon Paper.** Firm of G. Wagner, Hannover, Germany.

324,988. **Wrinkled Rubber.** Dunlop Rubber Co., Ltd., London, E. A. Murphy, R. G. James, and D. F. Twiss, all of Birmingham.

325,020. **Composition.** P. Finlayson, London, and W. W. Gunn, Victoria, Australia.

325,034. **Proofing.** C. E. Goddard, London.

325,302. **Rubber Surfacing Material.** L. P. F. F. Cresson, Gravenhage, Holland.

325,312. **Composition.** F. Weckerle, Munich, Germany.

General

United States

1,751,557. **Heel.** C. Roberts, Winchester, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

1,751,733. **Window Guide.** R. T. Griffiths, assignor to Miller Rubber Co., both of Akron, O.

1,751,855. **Fountain Pen.** E. C. Franzmann, W. Somerville, Mass.

1,751,990 and 1,751,991. **Shoe.** J. F. Gilkerson, Stillwater, Minn.

1,752,101. **Mining Prop.** H. Meutsch, Essen, Germany.

1,752,210. **Filter Fabric.** S. C. Smith, London, England.

1,752,423. **Doorcheck.** F. K. Eastman, assignor to Concealed Door Check Co., both of Kokomo, Ind.

1,752,787. **Shoe.** D. A. Cutler, Wollaston, Mass.

1,752,808. **Water Bag Closure.** M. B. Reach, assignor to Stopperless Water Bottle Co., both of Springfield, Mass.

1,752,845. **Tire.** E. Hibbert, Goulburn, N. S. W., Australia.

1,752,883. **License Plate Frame.** W. R. Busenbark, Akron, O.

1,752,969. **Swimmer's Buoy.** W. R. Denbo, Jackson, Mich.

1,753,038. **Window Pane Slideway.** D. H. Van Hove, Royal Oak, Mich.

1,753,284. **Heel.** D. B. Cropp, New York, N. Y.

1,753,309 and 1,753,310. **Exercising Ball.** H. O. Costello, Providence, R. I.

1,753,349. **Traction Device.** G. W. Perks, assignor to J. R. Gammeter, both of Akron, O.

1,753,411. **Bumper.** C. H. Gunn, Alameda, Calif.

1,753,489. **Vehicle Suspension.** R. A. Weinhardt, assignor to Packard Motor Car Co., both of Detroit, Mich.

1,753,606. **Kneeling Pad.** W. Holmes, Chicago, Ill.

1,753,611. **Tray.** M. S. Lower, Barberton, O., assignor to Sun Rubber Co., a corporation of O.

1,753,688. **Tire Mender.** J. M. Boscardin, Canaan, Conn.

1,753,692. **Heel.** A. W. Carlson, Spokane, Wash.

1,753,702. **Shoe Article Manufacture.** R. T. Griffiths, assignor to Miller Rubber Co., both of Akron, O.

1,753,808. **Spring Shackle.** C. R. Short, Dayton, O., assignor to General Motors Research Corp., Detroit, Mich.

1,753,826. **Knee Grip.** L. Gaisman, Audenshaw, near Manchester, England.

1,753,919. **Cotton Picker.** J. H. Cooper, Chicago, Ill.

1,753,952. **Refrigerator Door.** C. C. Spreen, assignor to Kelvinator Corp., both of Detroit, Mich.

1,753,970. **Tool Hammer Head.** O. Rolfsen, Knivso, near Halden, Norway.

1,753,976. **Furniture Glide.** C. W. White, assignor to H. C. White Co., both of N. Bennington, Vt.

1,754,165. **Lip Protector.** P. Fabian, Chemnitz, Germany.

1,754,203. **Time Indicator for Tires.** F. W. Gibson, W. Roxbury, Mass.

1,754,225. **Shoe Filler.** C. C. Eaton, Brockton, Mass., assignor, by mesne assignments, to E. A. Gray, Augusta, Me.

1,754,308. **Machine Unit Support.** R. F. Cowell, Teaneck, N. J., and R. W. Davis, Flushing, assignors to International Motor Co., New York, both in N. Y.

1,754,309. **Shock Insulator Drawbar.** R. F. Cowell, Teaneck, N. J., assignor to International Motor Co., New York, N. Y.

1,754,342. **Swimming Jacket.** A. Tubiolo, Columbus, O.

1,754,347. **Antirattle Spring Device.** H. E. Blomgren, Brooklyn, N. Y.

1,754,459. **Musical Educational Toy.** I. Cash, Brooklyn, N. Y.

1,754,556. **Plug Inserting Needle.** J. W. Hodgson, assignor to Miller Rubber Co., both of Akron, O.

1,754,624. **Plugging Tires.** R. T. Griffiths, assignor to Miller Rubber Co., both of Akron, O.

1,754,776. **Bottle Closure.** S. J. Stanley, New York, N. Y.

1,754,793. **Ice Cream Cabinet Closure.** F. R. Jefferys, assignor to Aetna Rubber Co., both of Cleveland, O.

1,754,836. **Tire.** F. G. Schenuit, Baltimore, Md.

1,755,010. **Tire Pressure Indicator.** C. W. G. Little, Enfield, England.

1,755,048. **Tire Building Bag.** R. C. Brice, assignor to Miller Rubber Co., both of Akron, O.

1,755,155. **Windshield Wiper.** W. Storrie, Providence, R. I., assignor to Apco Mossberg Corp., Attleboro, Mass.

1,755,161. **Toy.** R. B. Weimer, assignor of one-half to Miller Rubber Co., both of Akron, O.

Dominion of Canada

299,019. **Heel.** J. F. Gilkerson, Stillwater, Minn., U. S. A.

299,192. **Ice Cream Shipper.** S. O. Staake and R. W. Hutchens, assignee of half-interest, both of Eau Claire, Wis., U. S. A.

299,209. **Window Cleaner.** M. and J. Haüpel, co-inventors, both of Wien VI, Austria.

299,241. **Flush Tank Valve.** J. H. Johnson, Toronto, Ont.

299,248. **Resilient Tire.** M. Leupold, Jamaica, N. Y., U. S. A.

299,549. **Splice.** Carney Splice Protector Co., assignee of S. E. Carney, both of Wick, W. Va., U. S. A.

299,609. **Cushioning Draft Gears.** Vaugh Equipment Co., Chicago, Ill., assignee of H. D. Page, Depew, N. Y., both in the U. S. A.

299,610. **Car Draft Gear.** Vaugh Equipment Co., Chicago, Ill., assignee of H. D. Page, Depew, N. Y., both in the U. S. A.

United Kingdom

324,418. **Water Bottle Stopper.** E. T. Everton, Ltd., Birmingham.

324,644. **Cleaning Milking Tubes.** G. H. Gascoigne, Wokingham, and J. R. Knox Reading, both in Berkshire.

324,649. **Mud Guard.** E. L. Wilson, Wallington, Surrey.

324,825. **Tire.** Dunlop Rubber Co., Ltd., London, and W. E. Hardeman, Birmingham.

324,842. **Tire.** J. R. Whitehouse, Essex.

324,861 and 325,162. **Horseshoe Pad.** J. F. Brodersen, Tönsberg, Norway.

324,870. **Breast Pads.** D. J. Kennedy, Yonkers, N. Y., U. S. A.

324,872. **Door Spring.** A. Reese, Hamburg, Germany.

324,917. **Telescopic Umbrella.** H. Schröder, Cassel, Germany.

325,024. **Spring.** H. J. Weydert, Levallois-Perret, France.

325,025. **Milk Churn.** W. Bradley, Derby.

325,090. **Shock Absorber.** Sir W. G. Armstrong Whitworth Aircraft, Ltd., and H. N. Wylie, both of Coventry.

325,102. **Battery Inspection Lamp.** Hart Accumulator Co., Ltd., and F. H. Pearse, both of London.

325,113. **Horseshoe Pad.** W. Heap, Yorkshire.

325,118. **Massage Roller.** P. Mayer, Vienna, Austria.

325,149. **Golf Tee.** E. A. Bellow, St. Leonards-on-Sea.

325,157. **Armored Cable.** Nord-deutsche Seekabelwerke A. G. and C. Traugott, both of Nordenham-on-Weser, Germany.

325,236. **Respirators.** G. B. Momsen, Bethesda, Md., C. L. Tibbals and F. M. Hobson, both in Washington, D. C., all in the U. S. A.

325,262. **Vehicle Motor Mounting.** Morris Commercial Cars, Ltd., and W. W. Hamill, both of Birmingham.

325,322. **Tire Tread Band.** J. A. Jackson, Birmingham.

325,415. **Truss Pad.** H. E. Curtis & Son, Ltd., and L. V. Curtis, both of London.

Germany

495,506. **Tire.** L. Harter, Berlin-Wannsee.

495,600. **Automobile Horn.** J. Hartmann, Lippstadt.

495,663. **Cleaning Device.** H. Abrell, Freiburg, Br., O. Abrell, Anselfingen, Engen, Baden, and P. Trippel, Freiburg, Br.

495,922. **Fender.** O. Schiedeck, Hamburg.

496,424. **Elastic Fabric.** Société du Caoutchouc Manufacturé, Paris, France. Represented by R. V. Rothenburg, Darmstadt.

496,850. **Pneumatic Cushion.** Isana Vertrieb Sanitarer Artikel G. m. b. H., Nurnberg.

497,062. **Ball.** F. A. Ruegenberg, Olpe, Westf.

Designs

1,109,395. **Rubberized Apron.** K. Beckmann, Berlin-Halensee.

1,109,605. **Overshoe.** S. Juda, Berlin W. 15.

1,109,629. **Flower-Pot Collar.** H. P. Vierschrodt, Gotha.

1,109,734. **Felloe.** Continental Gummiwerke A. G., Hannover.

1,109,819. **Welding Hose.** Bremer Gummiwerke Roland A. G., Bremen.

1,109,855. **Pneumatic Tire.** H. Reifers, Selm i. W.

1,110,017. **Disk Wheel.** Dunlop Rubber Co., Ltd., London, England. Represented by R. and M. M. Wirth, C. Weihe, H. Weil, all of Frankfurt a. Main, and T. R. Koehnhorn, Berlin S. W. 11.

1,110,028. **Roll.** Firma Felix Bottcher, Leipzig O. 27.

1,110,141. **Swimming Device.** J. Landsberger, Berlin C. 54.

1,110,286. **Stair Rod.** Allgemeine Elektricitats-Gesellschaft, Berlin N. W. 40.

1,110,373. **Curtain Rod.** Allgemeine Elektricitats-Gesellschaft, Berlin N. W. 40.

1,110,571. **Bearing.** Continental Gummi-Werke A. G., Hannover.

1,110,618. **Toilet Brush.** H. v. Eschstruth, Kassel-Wilhelmshohe.

1,110,619. **Bath Brush.** H. v. Eschstruth, Kassel-Wilhelmshohe.

1,110,656. **Doll.** A. Klotzer, Sonneberg i. Th.

1,110,657. **Finger Cot.** M. Germscheidt, Oberhausen, Rheinld., and J. Hagedorn, Essen-Frintrop.

1,110,824. **Elastic Covering.** E. M. Muller, Leipzig-Plagwitz.

1,110,826. **Heel.** K. Reichert, Mainz.

1,111,086. **Apron.** C. Muller Gummiwarenfabrik A. G., Berlin-Weissensee.

1,111,096. **Stocking.** Braunlich & Co., Zeulenroda.

1,111,208. **Mat.** Continental Gummiwerke A. G., Hannover.

1,111,436. **Elastic Fabric.** Cosman, Villbrandt & Zehnder A. G. (Vereinigte Gummibandfabriken), Elberfeld.

1,111,707. **Bead.** Continental Gummiwerke A. G., Hannover.

1,111,755. **Patch.** O. A. Fronek, Zittau.

1,112,119. **Inflatable Figure.** Gummiwarenfabrik bei Melle, Wortmann & C. Bosch, Melle.

1,112,130. **Protector.** Blodner & Vierschrodt, Gummiwaren-Fabrik & Hanfschlauchweberei A. G., Gotha.

1,112,175. **Tire Cover.** Cronos Werk Rud. Schlieper, Remscheid-Hasten.

1,112,274. **Raincoat.** Meyer & Ries, Hannover.

1,112,282. **Finger Cot.** G. Ehinger, Balingen, Wurtt.

1,113,037 to 1,113,040 inclusive and 1,114,822. **Nonskid Tire.** Continental Gummi-Werke A. G., Hannover.

1,113,365. **Woven Hose.** Vereinigte Gothania Werke A. G., Gotha.

1,113,378. **Inflatable Hollow Body.** Gummiwarenfabrik bei Melle, Wortmann & C. Bosch, Melle.

1,113,546. **Sponge Rubber Packing.** W. Warth, Naugard.

1,113,628. **Writing Pad.** Osco Gummiwarengesellschaft M. Thielmann, Giessen.

1,113,746. **Pipe Mouth Piece.** W. Lange, Cologne.

Prints

United States

12,483. **The Mark of a Skilled Rebuilder.** Soles and heels. United States Rubber Co., New York, N. Y.

Trade Marks

United States

268,941. **"Dutch" Lonborg.** Footwear. Servus Rubber Co., Rock Island, Ill.

268,943. **"Phog" Allen.** Footwear. Servus Rubber Co., Rock Island, Ill.

268,998. **Terrishu.** Bathing shoes. I B. Kleinert Rubber Co., New York, N. Y.

269,048. Representation of the Fisk Boy. Compounded unvulcanized rubber, uncured sheet rubber, and tire-flap material. Fisk Rubber Co., Chicopee Falls, Mass., and Cudahy, Wis.

269,074. **Rainbow.** Sandals or footholds. I. B. Kleinert Rubber Co., New York, N. Y.

269,089. Ellipse containing the words: **"Du Pont"** and below the word: **"Pontop."** Rubberized fabrics. E. I. du Pont de Nemours & Co., Wilmington, Del.

269,118. Representation of the Fisk Boy before a sign bearing the word: **"Fisk."** Compounded unvulcanized rubber, uncured sheet rubber, and tire-flap material. Fisk Rubber Co., Chicopee Falls, Mass., and Cudahy, Wis.

269,187. **Wiccapee.** Belting and hose. New York Rubber Corp., Beacon, N. Y.

269,217. **Red Wing.** Golf balls. Carson Pirie Scott & Co., Chicago, Ill.

269,251. Representation of the Fisk Boy before a sign bearing the word: **"Fisk."** Cord and square woven fabrics. Fisk Rubber Co., Chicopee Falls, Mass., and Cudahy, Wis.

269,252. Representation of the Fisk Boy. Cord and square woven fabrics. Fisk Rubber Co., Chicopee Falls, Mass., and Cudahy, Wis.

269,381. **Hollywood.** Hose, belting, and packing. Hewitt-Gutta Percha Rubber Corp., Buffalo, N. Y.

269,393. **Super-Savings.** Games, toys, and sporting goods. L. Bamberger & Co., Newark, N. J.

269,470. **Para-Kaytone.** Rubberized drapes, draperies, table covers, etc. Para Rubber Co., Newark, N. J.

269,494. Ellipse containing the words: **"Du Pont"**, and below the words: **"Everbright Pontop."** Rubberized fabrics. E. I. du Pont de Nemours & Co., Wilmington, Del.

269,498. Circle containing a design formed by lines, and the words: **"Delawear Sole."** Rubber and composition slabs. Essex Rubber Co., Inc., Trenton, N. J.

269,499 and 269,541. **Federal.** Compounded unvulcanized rubber and uncured sheet rubber. Federal Rubber Co., Chicago, Ill., Cudahy, Wis., and Chicopee Falls, Mass.

269,533. Triangle containing representation of a cat's face and the word: **"CAT."** Tire casings and tubes. Corliss Anderson Tire Corp, New York, N. Y.

269,534. Shield formed by the words: **"United Heavy Duty Tube."** Inner tubes. A. Meyerowitz, doing business as Brooklyn Tire Exchange, Brooklyn, N. Y.

269,542. Pennant bearing the word: **"Federal."** Compounded unvulcanized rubber and uncured sheet rubber. Federal Rubber Co., Chicago, Ill., Cudahy, Wis., and Chicopee Falls, Mass.

269,575. **Oxford. Combs. Julius Schmid,** Inc., New York, N. Y.

269,606. **Solatex.** Prepared crepe rubber in sheets. Wilkinson Process Rubber Co., Ltd., Kuala-Lumpur, Federated Malaya States.

269,659. Circle containing representation of an eagle, between the words: **"Goodyear Eagle."** Tires and tubes therefor. Goodyear Tire & Rubber Co., Akron, O.

Dominion of Canada

48,968. **Normal Tred Arch.** Footwear. P. C. Wolfer, Everett, Mass., U. S. A.

48,998. **Spencer Moulton.** Articles made wholly or partly of rubber for use on railways. George Spencer, Moulton & Co., Ltd., London, S.W.1, England.

49,108. **Con-trak-tor.** Rubber goods and articles of various classes. Dominion Rubber Co., Ltd., Montreal, P. Q.

United Kingdom

492,086. Circle containing representation of a man's head, and above, rectangle containing the word: **"Waverley."** Footwear. Waverley Rubber Co., Ltd., Edinburgh, Scotland.

498,679. **Hevea Crystal Cord.** Tires. Naamlooze Vennootschapp Vereenigde Nederlandsche Rubberfabrieken, Heveadorp, Holland.

508,799. **Maxmarking.** All goods in Class 49. Dunlop Rubber Co., Ltd., London, N.W.1.

508,800. **Maxmark.** All goods in Class 49. Dunlop Rubber Co., Ltd., London, N.W.1.

508,801. **Multimark.** All goods in Class 49. Dunlop Rubber Co., Ltd., London, N.W.1.

508,802. **Maximark.** All goods in Class 49. Dunlop Rubber Co., Ltd., London, N.W.1.

509,053. **Crystal.** Tires and tubes therefor. Naamlooze Vennootschapp Vereenigde Nederlandsche Rubberfabrieken, Heveadorp, Holland.

509,312. **Darex.** India rubber solution. Dewey & Almy Chemical Co., Cambridge, Mass., U. S. A.

509,670. **Matador.** All goods in Class 40, excluding elastic webbing and like goods. Beldam Packing & Rubber Co., Ltd., London, E. C. 3.

509,914. **Tiron.** Rubber covered wire. St. Helen's Cable & Rubber Co., Ltd., Buckinghamshire.

510,476. **Twinsulo.** Rubber covered wire. A. Vandam & Co., Ltd., London, S.W.1.

510,556. Monogram of letters: **"E T R."** All goods in Class 40. English Tyre & Rubber Co., Ltd., London, E.C.4.

Designs

United States

80,875 and 80,876. **Sole.** Term 14 years. A. S. Bannister, assignor to Revere Rubber Co., both of Providence, R. I.

80,929. **Sole.** Term 7 years. C. C. Tucker, assignor to Essex Rubber Co., both of Trenton, N. J.

80,930. **Bathing Cap.** H. A. Bauman, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

80,979 to 80,985 inclusive. **Toy Figure.** Term 3½ years. P. M. Weamer, Gladwyne, assignor to Lee Rubber & Tire Corp., Conshohocken, both in Pa.

MARKET REVIEWS

Crude Rubber

New York Exchange

THE new low record price levels reached in New York and London have stimulated large producers and native growers to look for a remedy more likely to give relief than the ineffective May tapping holiday. The first to predict that the present month's suspension of rubber production in the Far East would not prove sufficient to bring about a marked improvement in prices, was Sir Frank A. Swettenham, foremost British rubber producer. On May 6 a statement was forwarded to the members of the Rubber Exchange, New York, in which he said: "Even a repetition of the expedient would hardly do more than give temporary relief because the power to produce an excessive quantity of rubber is always present, and any rise in price would prove a strong temptation to use it. I think Malaya is capable of producing a greater tonnage than we have yet seen, and it is known that the Netherlands East Indies have a large acreage of young rubber trees approaching maturity."

His suggested remedy was that the government in the East withhold further grants of land for rubber planting for a period of from three to five years.

An objection might be raised to this suggestion, because in recent years rubber producers have been taking better care of their trees, using better seed, and grafting the best stocks. With no increase in acreage, intensified cultivation and further utilization of land already held would show substantial increases in production.

The following opinion is that of H. J. Welch, chairman of the Rubber Plantations Investment Trust, the largest holding company of British producers:

"If the industry was a monopoly," Mr. Welch said, "restriction of tapping with price as the factor of regulation would undoubtedly be sound and effective, but at least two-fifths of the total area planted with rubber is owned by natives whose adhesion to a common policy cannot be secured."

RUBBER BULL POINTS

1. Expected seasonal increase in volume of shipments in second and third quarters.
2. Inventory of finished tires declined 17 per cent for April.
3. Stocks of inner tubes declined 20 per cent for April.
4. Stocks of unsold tires in hands of dealers declined 25 per cent for April.
5. April auto output shows big rise.
6. Heads of rubber concerns, here and abroad, combine to work for trade pact.
7. Native producers feeling necessity for curtailment.
8. Elimination of weak holders.
9. New uses for rubber.
10. Record exports of rubber toys.

RUBBER BEAR POINTS

1. Reflecting drop in output of cars of about 30 per cent, production of tires was held at a level about 25 per cent below initial three months of last year, and about 15 per cent lower than in 1928 (same period).
2. Shipments declined in first three months, bringing them slightly below production.
3. Accumulation of large stocks.
4. Productive capacity 50 per cent in excess of normal demand.
5. Estimated earnings decline 50 per cent by Moody's for first quarter.
6. Stocks of crude rubber in U. S. on March 31, 1930, largest on record, showing an increase of 63,150 tons, or 40 per cent, as compared with same date last year.
7. Estimated production will exceed demand.
8. Record large stocks on hand in London and Liverpool. (Over 100,000 tons.)
9. Heavy shipments from the East and reported failure of tapping agreement.
10. Cut in tire prices.

During the week ended April 26, prices were much easier with total declines for the week of from 60 to 100 points. On April 24, H. Hentz & Co. explained this decline by saying that "Prices have continued to ease gradually owing to the bearishly construed monthly report, further increases in stocks here and abroad, and liberal liquidation of May contracts by commission houses. . . . The approach of the tapping holiday in May has caused no improvement in prices as yet due to the fact that the probable loss of 30,000 to 35,000 tons production will be negligible in view of the weight of present world stocks."

Week ended May 3. On Thursday more than 90 per cent of the far eastern rubber producers suspended production in accordance with the plan to stop tapping during the entire month of May. As a result rubber producing companies in Malaya and the Dutch East Indies will now ship out of stocks on hand to fill contracts with consumers in America and elsewhere.

According to the F. R. Henderson Corp. on May 2, "A better feeling prevails in the local market, due largely to the smaller shipments from the East during April, and consumption during the same month will be greater than expected."

Gross Malayan rubber shipments to all countries during April were 43,813 tons, compared to 47,320 tons during March and to 49,816 tons during the same month last year. April exports from the chief producing country were the smallest of the year. Rubber stocks at London and Liverpool again continued to show increases for last week. At London 832 tons were added, making a total of 74,084 tons, and at Liverpool an increase of 883 tons brought the total there to 23,546 tons.

A Reuter despatch from Batavia on April 28 reads: "A full report on the rubber situation is being mailed to Europe at the end of the month by M. Marinus, virtual dictator of the Dutch Industry, addressed to both the Dutch Rubber Committee and the Anglo-Dutch joint committees; so it will reach practically the entire European owned industry.

"The review was drawn up after consultation with managers of the Dutch East Indies rubber estates on means of improving the present situation. It carries a stabilization plan by M. Marinus providing for a permanent organization of producers for the stabilization of prices as a means of bringing world production of rubber back to a healthy basis."

With new lows recorded during the week, the market eagerly awaited statistics that would improve the technical position of the market. Prices at the close of May 3, on No. 1 Standard contracts were:

Rubber Exchange

Daily Futures—Smoked Sheets—Clearing House Prices—Cents Per Pound—"No. 1 Standard" Contracts

Positions	April, 1930									May, 1930					
1930	21	22	23	24	25	28	29	30	1	2	3	5	6	7
May	15.17	14.95	14.75	14.70	14.35	14.25	14.25	14.15	14.15	14.30	14.30	14.21	14.10	14.15	14.22
June	15.36	15.15	14.93	14.87	14.57	14.47	14.49	14.40	14.35	14.51	14.54	14.38	14.27	14.32	14.38
July	15.55	15.36	15.20	15.15	14.80	14.70	14.73	14.65	14.55	14.72	14.74	14.55	14.44	14.49	14.55
Aug.	15.76	15.56	15.43	15.35	15.01	14.90	14.93	14.85	14.77	14.92	14.93	14.80	14.64	14.69	14.75
Sept.	15.94	15.76	15.66	15.55	15.22	15.10	15.15	15.05	15.00	15.12	15.12	15.05	14.84	14.89	14.95
Oct.	16.13	15.95	15.86	15.73	15.41	15.30	15.34	15.25	15.19	15.32	15.32	15.25	15.04	15.06	15.12
Nov.	16.32	16.15	16.06	15.91	15.60	15.51	15.53	15.45	15.37	15.52	15.52	15.45	15.24	15.22	15.28
Dec.	16.53	16.35	16.26	16.10	15.80	15.72	15.73	15.65	15.55	15.72	15.72	15.65	15.44	15.39	15.45
1931															
Jan.	16.73	16.55	16.46	16.30	16.00	15.92	15.93	15.85	15.75	15.92	15.92	15.85	15.61	15.57	15.63
Feb.	16.93	16.75	16.66	16.50	16.20	16.12	16.13	16.05	15.95	16.12	16.12	16.05	15.78	15.76	15.81
Mar.	17.13	16.95	16.86	16.70	16.40	16.32	16.33	16.25	16.15	16.32	16.32	16.25	15.95	15.95	15.99
Apr.	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.52	16.52	16.45	16.12	16.12	16.18

Positions	May, 1930														
1930	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24
May	14.33	14.50	14.38	14.18	14.35	14.26	14.25	14.15	14.05	13.90	13.82	13.95	14.05	14.23	14.30
June	14.49	14.66	14.53	14.33	14.50	14.41	14.42	14.28	14.14	14.00	13.90	14.03	14.12	14.29	14.35
July	14.66	14.82	14.68	14.48	14.65	14.56	14.60	14.42	14.24	14.10	13.99	14.12	14.20	14.35	14.40
Aug.	14.86	15.02	14.88	14.71	14.84	14.75	14.75	14.50	14.42	14.30	14.18	14.31	14.37	14.49	14.57
Sept.	15.06	15.22	15.08	14.95	15.03	14.94	14.91	14.78	14.60	14.50	14.37	14.50	14.55	14.64	14.75
Oct.	15.23	15.39	15.25	15.12	15.20	15.14	15.08	14.95	14.75	14.64	14.52	14.63	14.69	14.80	14.89
Nov.	15.39	15.55	15.42	15.29	15.36	15.34	15.24	15.11	14.90	14.77	14.66	14.76	14.83	14.95	15.02
Dec.	15.55	15.71	15.59	15.47	15.53	15.54	15.41	15.28	15.05	14.90	14.80	14.90	14.97	15.10	15.15
1931															
Jan.	15.73	15.89	15.77	15.65	15.71	15.74	15.57	15.44	15.15	15.05	14.90	15.09	15.16	15.20	15.27
Feb.	15.91	16.07	15.95	15.83	15.89	15.89	15.73	15.60	15.30	15.20	15.00	15.16	15.24	15.30	15.38
Mar.	16.09	16.25	16.13	16.00	16.07	16.05	15.89	15.76	15.45	15.35	15.10	15.24	15.32	15.40	15.50
Apr.	16.28	16.43	16.31	16.18	16.25	16.22	16.05	15.92	15.60	15.50	15.20	15.32	15.40	15.50	15.62

Position	High	Low	Close	Yesterday's Close
May	....	....	14.21	14.30
June	....	....	14.38	14.54
July	....	....	14.55	14.74
Aug.	....	....	14.80	14.93
Sept.	15.14	15.14	15.05	15.12
Oct.	....	....	15.25	15.32
Nov.	....	....	15.45	15.52
Dec.	....	....	15.65	15.72
Jan.	....	....	15.85	15.92
Feb.	....	....	16.05	16.12
Mar.	....	....	16.25	16.32
Apr.	....	....	16.45	16.52

Week ended May 10: The week was quiet, with prices easing off to new low levels. In view of these prices the advice offered by H. Hentz & Co. on May 8 seems sound:

"While quiet conditions appear likely to prevail for the immediate future, with little change in prices indicated, we believe that the present level is favorable for purchases of the far forward positions."

There certainly is a limit to the extent of a decline, and it appears that the crude rubber market should soon witness a turn for the better.

In a cable received a few days later by the Rubber Exchange from London, the hope of further efforts by producers was extended: "Rubber closed a shade harder on the remarks of the chairman of the Rubber Plantations Investment Trust at today's meeting, who said, 'Provided the present May tapping holiday proves insufficient, producers should agree to cease tapping seven consecutive days every month following the one wherein the average spot price in London does not exceed 9 pence.' "

The effect of tapping cessations probably will not be definitely known until July when the figures on June shipments are announced. The record low levels now prevailing are slowly encouraging more buying.

Stocks of crude rubber for the week of May 3 increased 1,456 tons at London and 331 tons at Liverpool, making 75,540 tons and 31,580 tons, respectively. Prices at the close of May 10 on "No. 1 Standard" contracts were:

Position	High	Low	Close	Yesterday's Close
May	....	....	14.38	14.50
June	....	....	14.33	14.66
July	....	....	14.68	14.82
Aug.	....	....	14.88	15.02
Sept.	15.20	15.15	15.08	15.22
Oct.	....	....	15.25	15.39
Nov.	....	....	15.42	15.55
Dec.	15.69	15.69	15.59	15.71
Jan.	....	....	15.77	15.89
Feb.	....	....	15.95	16.07
Mar.	16.26	16.26	16.13	16.25
Apr.	....	....	16.31	16.43

RUBBER EXCHANGE ACTIVITIES

Transactions

Week Ended	Contracts Sold: Number	Contracts Sold: Tons	Transferable Notices	Week-End Tone
May 3	1,160	2,900.0	146	Barely steady
May 10	1,173	2,932.5	198	Quiet
May 17	569	1,422.5	162	Easier
May 24	794	1,985.0	251	Quiet
Totals	3,696	9,240.0	757	

Week ended May 17: The rubber market spent another week in the doldrums. Quiet trading was the rule, with almost no change in price. The few statistics that came to notice were ignored, probably because they had already been discounted. The Rubber Manufacturers' Association reported consumption of 40,207 tons, an increase of 4,293 tons over March, compared to estimates of 40,000 and 41,000 tons, and the predictions on imports and stock on hand were also close to estimates.

A cablegram from Singapore received on May 12 by the Rubber Exchange of New York stated:

"The Johore Planters' Association today passed a resolution favoring the government's suggestion that a weekly rest day be observed by rubber plantations and by native growers. To carry this out tapping of trees on Sundays will be prohibited. The association rejected, however, the government's second suggestion that tapping be prohibited during the bimestre wintering season (two months during the Malayan wintering period)."

In response to notice that a mail order firm had cut prices on tires, dispatches from Akron stated that this would have little, if any, effect on price schedules of the leading manufacturers. The first line tires of the large firms will probably remain unchanged, and if the competition of the mail houses is to be met at all, only second and third line tires will be adjusted in price.

The market at London and Singapore during the week was dull and unchanged. Prices at the close of Saturday, May 17, on No. 1 standard contracts were:

Position	High	Low	Close	Yesterday's Close
May	....	....	14.05	14.13
June	....	....	14.14	14.28
July	....	....	14.24	14.42
Aug.	....	....	14.42	14.50
Sept.	14.72	14.60	14.60	14.78
Oct.	....	....	14.75	14.95
Nov.	....	....	14.90	15.11
Dec.	15.15	15.15	15.05	15.28
Jan.	....	....	15.15	15.44
Feb.	....	....	15.30	15.60
Mar.	....	....	15.45	15.76
Apr.	....	....	15.60	15.92

Week of May 24: A selling movement started early in the week and gathered some momentum as bear news accumulated. In London a sharp break in prices occurred, establishing the lowest levels in history. The break followed a forecast of the failure of the Anglo-Dutch rubber output restriction scheme. Accumulated stocks in England reached the new record high total of 101,880 tons, compared to 35,107 tons at this time last year.

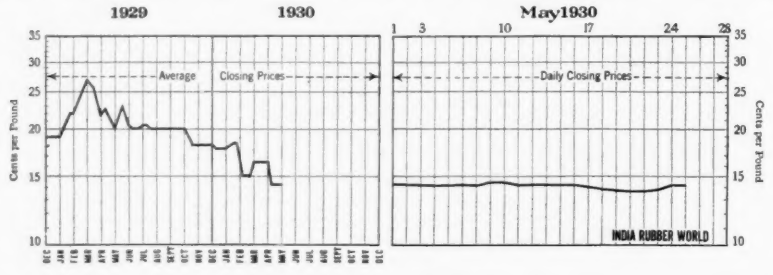
The bears hammered rubber on the 19th to equal the record low, and the next day established a new record low price at 13.80 cents for May. This weakness ended on Wednesday when the manufacturers stepped into the market and sent futures up 10 to 20 points. The news for the week, however, was not all bearish. An announcement appeared by four leading manufacturers, saying that they were formulating a pact with British and French manufacturers in a stabilization move.

Production of automobiles in the United States during April totaled 442,630 passenger cars and trucks and exceeded the output for any April in the last eight years except that of 1929.

Production for the first four months of this year totaled 1,446,590 cars and trucks, against 1,378,942 in the corresponding period of 1928, an increase of 87,448; but a substantial decrease from the 2,074,820 vehicles produced in the first four months of 1929. The trade, generally, will ignore 1929's overwhelming records and compare data with the more normal year of 1928.

Native producers seem to be realizing that present prices are at starvation levels,

New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets



New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	April, 1930 21	22	23	24	25	26	28	29	30	May, 1930 1	2	3	5	6	7	8	9	10	12	13	14	15	16	17
Ribbed Smoked Sheet	15⅛	14⅞	14¾	14¾	14½	14⅜	14¼	14¼	14⅛	14¼	14⅜	14⅜	14¼	14¼	14¼	14⅜	14½	14½	14¼	14⅜	14¼	14¼	14¼	14
No. 1 Thin Latex Crepe	15⅜	15⅛	15	15	14¾	14⅝	14½	14½	14⅜	14½	14⅝	14⅝	14½	14½	14½	14⅝	14¾	14¾	14½	14⅝	14½	14½	14⅜	14¼
No. 1 Thick Latex Crepe	15	14¾	14⅝	14⅝	14⅜	14¼	14⅛	14⅛	14	14⅛	14¼	14¼	14⅛	14⅛	14⅛	14⅜	14½	14½	14¼	14⅜	14⅜	14¼	14⅛	14
No. 1 Brown Crepe	14	13⅞	13¾	13¾	13⅝	13⅜	13⅜	13⅜	13⅜	13½	13⅝	13⅝	13½	13½	13½	13⅝	13¾	13¾	13⅝	13¾	13⅝	13⅝	13½	13⅜
No. 2 Brown Crepe	13¾	13⅝	13½	13½	13⅜	13⅛	13⅛	13⅛	13⅛	13¼	13⅜	13⅜	13¼	13¼	13¼	13⅜	13½	13½	13⅜	13½	13⅜	13⅜	13¼	13⅛
No. 2 Amber	14	13⅞	13¾	13¾	13⅝	13⅜	13⅜	13⅜	13⅜	13½	13⅝	13⅝	13½	13⅝	13⅝	13¾	13⅞	13⅞	13⅝	13⅞	13⅝	13⅝	13½	13½
No. 3 Amber	13¾	13⅝	13½	13½	13⅜	13⅛	13⅛	13⅛	13⅛	13¼	13⅜	13⅜	13¼	13⅜	13⅜	13½	13⅝	13½	13⅜	13½	13⅜	13⅜	13⅛	13¼
No. 4 Amber	13⅜	13¼	13⅛	13⅛	13	12¾	12¾	12¾	12¾	12⅞	13	13	12⅞	13	13	13⅛	13¼	13⅛	13	13⅛	13	13	12⅞	12¾
Rolled Brown	9⅝	9½	9⅜	9⅜	9⅛	9	9⅛	9⅛	9	9⅛	9¼	9¼	9⅛	9⅛	9⅛	9¼	9⅜	9⅜	9¼	9⅜	9⅜	9⅛	9¼	9¼

and necessity will induce a restriction that agreements could not effect. Asiatic rubber producers of Perak have adopted resolutions asking the government to take steps to stabilize the rubber industry, according to the Singapore advices to the Rubber Exchange on Wednesday, and this, together with the efforts of manufacturers, should give rubber relief in the near future.

Prices at the close of Saturday, May 24, were:

Position	High	Low	Close	Yesterday's Close
May	....	....	14.30	14.23
June	....	....	14.35	14.29
July	....	....	14.40	14.35
Aug.	....	....	14.57	14.49
Sept.	14.77	14.77	14.75	14.64
Oct.	....	....	14.89	14.80
Nov.	....	....	15.02	14.95
Dec.	15.17	15.16	15.15	15.10
Jan.	....	....	15.27	15.20
Feb.	....	....	15.38	15.30
Mar.	....	....	15.50	15.40
Apr.	....	....	15.62	15.50

On May 26 the market tone was quiet with prices down from 10 to 20 points from those of the 24th. Contracts sold were 7 "No. 1 Standard" and 118 "A." Spot ribs closed that day at 14.1 nominal and on the 27th weakened to 14 cents.

New York Outside Market

One who has been in the rubber business a good many years in discussing the present outlook for rubber, remarked that in his long experience he had passed through many times similar to the present. He admitted that the rubber market was in a very stagnant condition, but he also thought that dealers were inclined to be too pessimistic as soon as their normal trade was interrupted.

Back in 1920 the same problem of overproduction confronted the industry. At that time the English planters got together and agreed on restriction. With even this limited restriction, prices materially improved during the seven years of the Stevenson restriction period.

It is rather significant, therefore, to learn that the latest efforts at restriction have seen the Dutch, the English, and the native planters concurring in restriction attempts. It is the first time in history that this coordination has been effected, and it is a move in the right direction.

Economically, it is a necessary move. At present prices planters can hardly pay government costs, and the price received barely covers the cost of production. It is not likely that any new planting will be done at the present prices; and if the move for restriction does not effect an improvement, many planters may go bankrupt. The only thing that is saving a good many of them right now is the fact that they are delivering rubber sold last year at prices up to 25 cents.

The market is just marking time to see how the May cessation of tapping will work. Meanwhile we have a one-sided buyers' market, and indications are that those with storage and credit facilities are taking advantage of it.

It was learned from good authority that several of the large tire manufacturers are

New York Quotations

Following are the New York outside market rubber quotations for one year ago, one month ago, and May 26th, the current date

Plantation Hevea	May 25, 1929	April 25, 1930	May 26, 1930
Rubber latex (Hevea)..gal.	$1.50 @	$1.25 @	$1.25 @
Sheet			
Ribbed, smoked spot	.21¼ @	.14½ @	.14 @.14¼
June	.21½ @	.14⅝ @	.14 @.14⅜
July-Sept.	.21⅞ @.22	.15¼ @	.14½ @
Oct.-Dec.	.22¼ @.22½	.15¾ @	.15 @.15¼
Jan.-Mar.	.22½ @.23	@	.15½ @.15¾
CREPE			
No. 1 Thin latex (first latex) spot	.22 @.22¼	.15 @	.14½ @.14⅝
June	.22⅛ @.22¼	.15⅛ @	.14½ @.14⅝
July-Sept.	.22½ @.22⅝	.15¾ @	.14⅞ @.15
Oct.-Dec.	.22⅞ @.23	.16¼ @	.15½ @.15¾
Jan.-Mar.	.23¼ @.23½	@	.16 @.16¼
No. 2 Amber, spot ("B" blanket)	.19½ @	.14 @	.13¾ @.13⅞
June	.19¾ @	.14 @	.13¾ @
July-Sept.	.20¼ @	.14¼ @	.14 @
Oct.-Dec.	.20½ @	.14¾ @	.14¼ @
Jan.-Mar.	.20¾ @.21	@	.14¾ @
No. 3 Amber, spot ("C" blanket)	.19¾ @	.13¾ @	.13½ @
No. 1 Brown, clean, light, thin	.19½ @	.14 @	.13¾ @.14
No. 2 Brown, clean, thin..	.19¼ @	.13¾ @	.13½ @.13¾
Brown, roll	.15¼ @	.09½ @	.09½ @.09⅝
East Indian			
PONTIANAK			
Banjermasin	@	.08 @	.08 @
Pressed block	.15 @.16	.12 @	.12¾ @.13
Sarawak	@	.08 @	.08 @
South American			
PARAS			
Upriver, fine	.23 @	.16 @	.15⅜ @
Upriver fine	*.28 @	*.19¼ @	*.19¼ @
Upriver, coarse	.13¾ @	.07¼ @	.07½ @
Upriver, coarse	*.20 @	*.13 @	*.13¼ @
Islands, fine	.20½ @	.15 @	.14¾ @
Islands, fine	*.27½ @	*.19 @	*.19 @
Acre, Bolivian, fine	.23½ @	.16¼ @	.15¾ @
Acre, Bolivian, fine	*.29 @	*.19½ @	*.19½ @
Beni, Bolivian	.23¾ @	.16½ @	.16 @
Madeira, fine	.23 @	.16 @	.15⅜ @

South American	May 25, 1929	April 25, 1930	May 26, 1930
PARAS—*Continued*			
Peruvian, fine	$0.21½ @	$0.16 @	$0.14¾ @
Tapajos, fine	.21½ @	.15½ @	.14¾ @
CAUCHO			
Upper caucho ball	.13¼ @	.07⅛ @	.07½ @
Upper caucho ball	*.20 @	*.13 @	*.13¼ @
Lower caucho ball	.13 @	.06¾ @	*.07 @
Maniçobas			
Ceará negro heads	†.20 @	†.18 @	†.14 @
Ceará scrap	†.12 @	†.10 @	†.08 @
Manicoba, 30% guaranteed	†.22 @	†.20 @	†.16 @
Mangabiera, thin sheet	†.22 @	†.20 @	†.16 @
Centrals			
Central scrap	.12 @.13	.07 @.07½	.06 @.07
Corinto scrap	@	.07 @.07½	.06 @.07
Esmeralda sausage	.12 @.13	.07 @.07½	.06 @.07
Guayule			
Duro, washed and dried	.20 @	@	.16½ @
Ampar	.21½ @	@	.17 @
Gutta Percha			
Gutta Siak	.20 @	.15½ @	.16 @
Gutta Soh	@	.25 @	.28 @
Red Macassar	2.90 @	2.25 @2.60	2.25 @2.30
Balata			
Block, Ciudad Bolivar	.52 @.54	.43 @	.41 @.42
Colombia	.49 @	.38 @	†.36 @
Manaos block	.57 @.58	.44 @	.44 @.45
Surinam sheet	.54 @.56	.58 @	.60 @.62
Amber	.58 @.60	.60 @	.63 @.65
Chicle			
Honduras	‡.66 @	‡.65 @	@
Yucatan, fine	‡.66 @	‡.65 @	‡.70 @

* Washed and dried crepe. Shipment from Brazil.
† Nominal. ‡ Duty paid.

New York Outside Market (Continued)

	May, 1930					
	19	20	21	22	23	24
Ribbed Smoked Sheet	13⅞	13¾	13¾	13⅞	14⅛	14⅛
No. 1 Thin Latex Crepe	14⅛	14⅛	14⅛	14¼	14½	14½
No. 1 Thick Latex Crepe	13⅞	13¾	13¾	13⅞	14⅛	14⅛
No. 1 Brown Crepe	13¼	13⅜	13⅜	13½	13⅝	13⅝
No. 2 Brown Crepe	13	13¼	13⅛	13¼	13⅜	13⅜
No. 2 Amber	13¼	13⅜	13½	13⅝	13¾	13¾
No. 3 Amber	13	13⅛	13¼	13⅜	13½	13½
No. 4 Amber	12⅝	12¾	12¾	12¾	13	13
Rolled Brown	8¾	9	9	9	9⅛	9⅛

Low and High New York Spot Prices

PLANTATIONS	1930*	1929	1928
Thin latex crepe	$0.14⅛ @$0.14¾	$0.20¼ @$0.24⅛	$0.17⅝ @$0.20¼
Smoked sheet, ribbed	.13¾ @ .14½	.19½ @ .23⅝	.17⅜ @ .20
PARAS			
Upriver, fine	.15¼ @ .15¾	.21¼ @ .24¼	.18⅛ @ .21
Upriver, coarse	.07½ @ .07¾	.12¼ @ .14¼	.14¼ @ .17
Upper caucho ball	.07¼ @ .07½	.12¼ @ .14¼	.13½ @ .16

*Figured to May 26, 1930.

buying spot rubber and storing it away. By this method they are sure of cheap rubber in October and December, even cheaper than the present future prices of the late months with storage and credit costs included.

Rubber consumption is far behind the figures for last year. The reasons are that fewer new cars are being sold, and replacement demand for the record number of automobiles will not be felt until next year. A tire usually lasts two years so that the demand of the enormous number of new car owners of 1929 for new tires will not help matters until next year.

From present indications, that aid will be needed next year unless the demand for new cars speeds up considerably. Sales of new cars in the current year are largely those in the lower price ranges with Ford and Chevrolet predominating. Low-priced cars mean cheaper tires, and that condition will not extricate the rubber market from its present predicament.

Favorable weather for the next few months would be a boon. The motoring season is just beginning in real earnest, and pleasant weather is a strong inducement for the purchase of an automobile. The more automobiles purchased, the more tires produced.

As probably the only topic of outside interest is the May holiday tapping experiment, the view of another prominent rubber man might be interesting.

It is his opinion that the native planter in Malaya has large stocks of rubber on hand that he is holding until prices improve. With this condition existing, prices will not show much improvement for a long time. As soon as prices show a profit for these planters, they are going to dump their rubber and send prices back where they were.

It is also his view that there will not be much reduction in tapping by the natives because in late years they have been taking better care of the trees. Therefore without increasing acreage they can enlarge production by making the present trees produce more. The English and Dutch planters, too, have been paying more attention to selective seeding and grafting and are concentrating production. It is hard to determine how much effect these factors have on the market, but it is well to keep them in mind when acreage reduction or restriction agreements are discussed.

Some men seem to think that the only solution for rubber's troubles is increased consumption. That is true, and it is being done where least expected. New uses for rubber are being found constantly for both household and commercial consumption.

Because of the plethora of news on the subject, tapping restriction is probably receiving more attention than it deserves. Not everybody agrees as to its effectiveness. The most general opinion seems to be that it will reduce production about 30,000 tons, which amount will not influence prices appreciably.

To support the idea that restriction will not mean a great deal, the following observation seems pertinent. The workers who refrain from tapping are usually set to work cleaning up the plantation and weeding the trees. With this attention, naturally, the trees will grow better, and, when a rubber tree is rested for a day or two, it means a flush yield when it finally is tapped. The effect, therefore, of resting the trees is really beneficial and does not reduce the output very much.

Motor car production surely will not equal the exceptional year we had in 1929, but the latest figures on April and May production compare favorably with the years prior to 1929, and the tendency of industry, generally, seems to make comparison with these more normal years than with the boom year of 1929. With this more rational measuring-stick, business will soon find itself back to a normal plane.

If there is any consolation in the fact that misery loves company, rubber can find plenty of it. Practically all of the commodity markets—sugar, coffee, cotton—are as bad, if not worse, off than rubber.

Week of May 3. Unchanged to 20 points lower was the result of this week. Smoked sheets, spot for April and May on April 30 were 14 to 14¼; June 14⅛ to 14⅜; July-September was 14¾ to 15; and October-December was 15¼ to 15½.

On the same day spot 1st latex, thin, was quoted 14¼ to 14½, thin sole latex, 14⅜ to 14⅝, and clean, thin brown No. 2 was 13¼ to 13½. Specky crepe climbed from 9¼ to 9½ on the 26th to 12⅞ to 13⅛ (nominal) on the 30th. No. 2 amber stood at 13½ to 13⅞; No. 3 at 13¼ to 13⅝; and No. 4 at 12½ to 13⅛. Rolled brown crepe was 9¼ to 9½.

The closing record for the week was as follows:

Spot	May 3	Month Ago	Year Ago
Crepe	14⅝	15¾	20¼
Ribs	14⅜	15⅜	19⅞
Upriver fine	15¾	16½	21¾

Week of May 10. Prices held firm, with only slight demand from manufacturers to replenish factory stocks against current consumption. A fractional change was evident, with the week closing at prices that were about ⅛ higher than those in the previous week. The following is the closing record for the week:

Spot	May 10	Month Ago	Year Ago
Crepe	14¾	15⅜	21⅜
Ribs	14½	15⅛	20⅞
Upriver fine	15¾	16½	22½

Week of May 17. As far as prices are concerned, a ditto mark could be used for some time to come, and we would not be far amiss. A chart kept by one trader of the daily prices looks as if he were starting to draw a long, low plateau. Ribs, spot, and May, settled quietly at 14⅛ to 14⅜, and it will take a good deal of persuasion to dislodge it from that position.

Closing prices for the week follow:

Spot	May 17	Month Ago	Year Ago
Crepe	14¼	15⅜	23½
Ribs	14	15⅛	22⅞
Upriver fine	15½	16¼	24

Week of May 24. The same dull tendency prevailed, with slight demand and little activity. Prices on the London market were even worse than those in New York. They hit the lowest levels in history on the 21st when after a steady opening the London market was hit by a wave of liquidation and spot rubber touched 6 11/16 pence a pound, a new record low which compares with 6¾ pence a pound, the previous record low established in 1922. Factory demand holds steady on a hand-to-mouth basis. The closing prices for the week were as follows:

Spot	May 24	Month Ago	Year Ago
Crepe	14½	15	21¾
Ribs	14⅛	14¾	21⅜
Upriver fine	15½	16¼	23¼

Quiet conditions prevailed in the market for actuals on the 26th and 27th. Spot prices were unchanged but the forward deliveries of standard ribs were lowered slightly. On the 27th the price of ribs eased off to 14 cents, with very little doing.

Industry and Trade

National Industrial Conference Board Report

The automobile industry in April produced 466,887 units, being 11.0 per cent greater than March, but 29.5 per cent lower than the all time record in April, 1929. April this year surpassed all previous Aprils with the exception of 1929. Retail sales, as evidenced by new registrations in the United States, show a steady improvement during the first three months. New passenger car registrations in March gained 41 per cent over February, but dropped 21 per cent under March a year ago, and new truck sales in March were 32 per cent larger than February and only 9 per cent under March a year ago. Export sales have shown slow but steady improvement during the first three months, but March remained 46 per cent lower than March a year ago. Stocks of new passenger cars on April 1 this year were approximately 465,840, slightly over nine new cars per dealer.

The production of crude petroleum continues at the rate of approximately 2,600,000 barrels a day. There was a slight withdrawal from crude oil stocks during March, and preliminary estimates indicate a continuation of withdrawals. Gasoline stocks are beginning to show their seasonal decline. Domestic gasoline consumption continues to gain and will probably show an increase of 10 per cent to 11 per cent during the first four months of 1930 over the same period of 1929. Domestic consumption plus exports for that period will gain 12 per cent over 1929.

Crude rubber consumption in April was 12.0 per cent greater than in March, but 15.4 per cent less than in April, 1929. In the present month seasonal influences will probably carry consumption even higher than in April, but not higher than a year ago. Arrivals of crude rubber in April showed an increase of 9.9 per cent over March but a decrease of 7.8 per cent under April last year. Stocks of crude rubber on hand and in transit at the end of April increased 4.5 per cent over March and 37.7 per cent above the figure at the close of April, 1929.

RUBBER AFLOAT TO THE UNITED STATES

All figures in long tons.

Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	Total
Apr. 26....	5,558	642	1,224	..	7,424
May 3.....	7,703	1,384	1,806	25	10,918
May 10.....	6,863	891	1,271	11	9.036
May 17.....	6,359	650	1,874	30	10,913
May 24.....	6,041	741	1,500	162	8,444

Rubber Scrap

RUBBER scrap moved very slowly during May, although some slight improvement is expected as the third quarter of the year approaches. Business is at about 60 per cent of what might be termed normal volume, and prices likewise are at 60 per cent of last spring's levels. This situation is due to general business conditions and the excessive supply of crude rubber. A few grades of scrap are meeting with fair demand.

CONSUMERS' BUYING PRICES

Carload Lots

Delivered Eastern Mills
May 26, 1930

	Prices
Boots and Shoes	
Boots and shoes, black..100 *lb.*	$1.20 @$1.30
Untrimmed arctics....100 *lb.*	.75 @ .85
Tennis shoes and soles..100 *lb.*	.75 @ 1.00
Inner Tubes	
No. 1, floating.....*lb.*	.07 @ .07⅛
No. 2, compound.....*lb.*	.03¼ @ .03½
Red .....*lb.*	.03⅛ @ .03⅜
Mixed tubes .....*lb.*	.03⅛ @ .03⅜
Tires	
Pneumatic Standard	
Mixed auto tires with beads .....*ton*	16.00 @16.50
Beadless .....*ton*	22.00 @23.00
Special auto tire stock (S.A.G.) .....*ton*	22.00 @23.00
Auto tire carcass.....*ton*	25.00 @27.00
Black auto peelings....*ton*	25.00 @26.00
Solid	
Clean mixed truck....*ton*	24.50 @25.50
Light gravity .....*ton*	27.00 @29.00
Mechanicals	
Mixed black scrap.....*lb.*	.00¾ @ .01
Hose, air brake.....*ton*	15.00 @17.00
Garden, rubber covered..*lb.*	.00⅝ @ .00¾
Steam and water, soft..*lb.*	.00½ @ .00⅝
No. 1 red.....*lb.*	.02 @ .02¼
No. 2 red.....*lb.*	.01 @ .01½
White druggists' sundries..*lb.*	.02 @ .02½
Mechanical .....*lb.*	.01½ @ .01⅝
Hard Rubber	
No. 1 hard rubber.....*lb.*	.10 @ .10½

The following freight rate ruling is of interest to rubber scrap dealers and reclaimers.

Transcontinental Freight Bureau Docket No. 10,252, proposes to amend Item 3,755-A (junk), Tariff 1-G, by changing the explanation of the circle forty-one (41) reference mark to read: (41) Exception.—Rate on scrap rubber, in straight carloads is 60 cents per 100 pounds, minimum weight 40,000 pounds.

BOOTS AND SHOES. The demand for this grade of scrap has slowed down somewhat. The supply and demand are now essentially balanced, and quotations are unchanged.

INNER TUBES. No. 1 tubes are in good demand, but the supply is decreasing because this quality is being supplanted by the better grade of compounded tubes. No. 2 gray and red tubes are fairly active.

TIRES. The business in tires the past month fell below normal. The same is true of the supply. Both supply and demand decreased about 20 per cent.

Reclaimed Rubber

THE tabulated statistics for reclaim printed below show that the production in April was virtually the same as in March. Consumption in April, however, is reported larger by 1,705 tons than for March. The ratio of reclaimed to crude consumed declined 0.2 per cent below the ratio reported for March. This ratio has declined progressively since January, when it was 45.8 per cent, to 43.0 per cent for April.

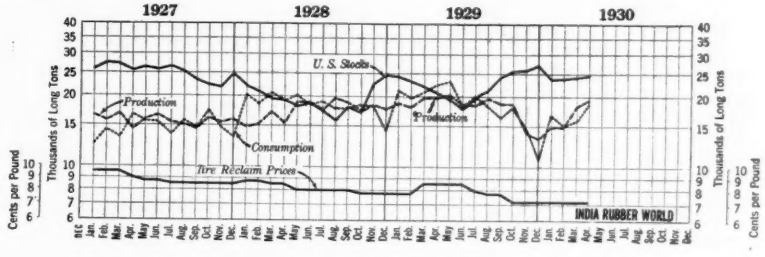
Production is proceeding at essentially 60 per cent of capacity. The demand has a distinctly upward trend, and the outlook for the remainder of the second quarter is encouraging. The insulated wire industry is gaining in activity. The shoe division is busy on summer and sport shoes and is not consuming reclaim so rapidly as when later in the summer the production begins of goods for winter wear.

The accompanying quotations are slightly below those reported a month ago on high tensile, black, and black selected auto tires. Light gray auto tire reclaim has been discontinued. All other grades are quoted unchanged except miscellaneous mechanical blends which are quoted 5 to 5½ cents, down 1 cent from last month.

New York Quotations

May 26, 1930

High Tensile	Spec. Grav.	Price Per Pound
Super-reclaim, black...	1.20	$0.10¾ @$0.11
red	1.20	.10½ @ .10¾
Auto Tire		
Black	1.21	.06¾ @ .07
Black selected tires....	1.18	.07 @ .07¼
Dark gray	1.35	.08¼ @ .08½
White	1.40	.11 @ .11½
Shoe		
Unwashed	1.60	.07 @ .07¼
Washed	1.50	.09 @ .09½
Tube		
No. 1	1.00	.12 @ .12¼
No. 2	1.10	.09 @ .09¼
Truck Tire		
Truck tire, heavy gravity	1.55	.07 @ .07¼
Truck tire, light gravity	1.40	.07¼ @ .07½
Miscellaneous		
Red	1.35	.10½ @ .11
Mechanical blends.....	1.60	.05 @ .05½



Production, Consumption, Stocks, and Prices of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1925	132,930	137,105	35.6	13,203	4,571
1926	180,582	164,500	45.9	23,218	5,391
1927	189,144	178,471	47.6	24,980	8,540
1928	208,516	223,000	50.4	24,785	9,577
1929	219,057	224,253	47.9	27,464	12,721
1929					
January	18,685	21,068	49.1	24,394	941
February	18,094	19,829	47.7	23,305	1,028
March	19,984	20,068	46.7	22,076	1,344
April	19,899	21,574	47.3	20,680	1,498
May	20,385	23,176	47.1	19,479	1,299
June	18,416	18,141	42.0	17,980	961
July	18,387	20,236	48.7	19,679	1,202
August	19,787	18,230	47.6	22,309	860
September	18,660	16,416	47.2	24,984	657
October	18,968	18,024	51.8	25,474	830
November	14,363	14,742	53.4	26,080	1,232
December	13,429	11,089	47.1	27,464	869
1930					
January	15,010	16,785	45.8	24,241	954
February	15,847	14,918	45.5	24,241	1,203
March	17,400	15,616	43.2	24,415	1,048
April	17,828	17,321	43.0	24,592	740

* Stocks on hand the last of the month or year.
Compiled by Rubber Manufacturers Association.

Imports, Consumption, and Stocks

THE upper of the accompanying graphs represents the closing prices of actual spot rib bed smoked sheet transactions reported by the Rubber Trade Association of New York. Prices during the past month have run but slightly above the 14-cent level, the highest price being 14½ cents on May 9 and 10. The weekly average for the first three weeks was 14¼ cents. In the upper chart also are the curves of United States imports and consumption. Both show some increase for April with the consumption curve lagging somewhat.

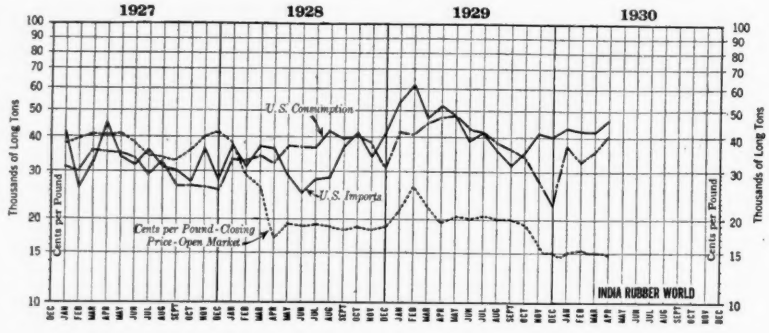
The net imports for April, 1930, were 46,997 tons, an increase of 4,658 tons over those for March. April consumption was 40,207 tons, an increase of 4,293 tons over March. This consumption is the highest monthly record so far this year and exceeds that for January by 3,538 tons, which had the largest previous monthly record for 1930. The Henderson Rubber Reports, Inc., estimate May imports at 37,500 tons, May consumption at 45,000 tons, and U. S. stocks on hand at the end of May at 137,000 tons.

The estimated increase of consumption reflects the improved condition that developed the past month in the tire division of the industry. Several of the leading tire companies are operating at close to their capacity rating and the Akron district output is averaging 70 per cent.

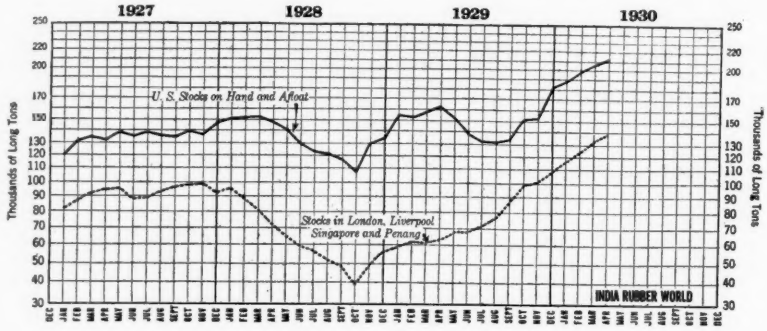
United States stocks of crude rubber on hand and afloat and combined London, Liverpool, Singapore, and Penang stocks are shown by the curves on the lower chart. Both are steadily mounting and together indicate a present world stock of around 425,000 tons.

London stocks between April 26 and May 24 increased by 2,869 tons. The weekly record is as follows: May 3, 75,540 tons; May 10, 76,118 tons; May 17, 76,932 tons; May 24, 76,953.

Liverpool stocks also advanced in the same interval by 1,226 tons. The weekly record of Liverpool stocks is: May 3, 23,877 tons; May 10, 23,755 tons; May 17, 24,448 tons; May 24, 23,772 tons.



United States Imports, Consumption, and Prices of Ribbed Smoked Sheets



United States, British and Malayan Rubber Stocks

United States Statistics of Rubber Imports, Consumption, and Stocks

Twelve Months	*Net Imports Tons	Consumption Tons	Stocks on Hand Tons	Stocks Afloat Tons	Total Domestic Stocks Tons	British and Malayan Stocks: London & Liverpool Tons	British and Malayan Stocks: Singapore & Penang Tons	British and Malayan Stocks: Total Tons
1925	385,596	388,000	50,985	52,421	103,406	6,328	18,840	25,168
1926	399,972	366,000	72,510	51,238	123,748	51,320	26,443	77,763
1927	403,472	373,000	100,130	47,938	148,068	66,261	25,798	92,059
1928	407,572	437,000	66,166	68,764	134,930	22,603	32,905	55,508
1929	527,327	464,644	105,138	62,389	167,527	73,253	35,548	108,801
1930								
January	44,093	36,669	126,068	61,863	187,931	81,300	33,468	114,768
February	41,373	32,726	134,790	63,404	198,194	87,100	37,550	124,650
March	42,339	35,914	141,843	63,646	205,489	93,500	38,129	131,629
April	46,997	40,207	148,272	63,261	211,533	99,870	39,880	139,750

*Including liquid latex, but not guayule.

United States Crude and Waste Rubber Imports for 1930 by Months

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1930	Total 1929	Balata	Miscellaneous	Waste
January ..... *tons*	46,042	362	747	76	10	125	...	47,362	52,305	127	748	35
February	42,510	275	788	66	14	75	...	43,728	64,538	130	543	144
March	44,002	332	894	37	15	150	...	45,430	53,824	123	738	20
April	48,727	179	881	53	12	75	...	49,927	54,171	87	628	107
Total, four months, 1930..... *tons*	181,281	1,148	3,310	232	51	425	...	186,447	.....	467	2,657	306
Total, four months, 1929..... *tons*	*219,970	...	4,541	113	142	59	13	.....	224,838	319	4,450	1,179

* Latex included.

Compiled from Rubber Manufacturers Association statistics.

Compounding Ingredients

PRODUCTION in the rubber industry is steadily gaining in volume. The second quarter began auspiciously with increased output in the tire and mechanical rubber goods divisions. Recent reports from the Akron district indicate that in that important section tire and tube production averages 70 per cent of capacity. Most of the leading tire companies are operating at 90 per cent capacity. Mechanical companies are stepping up production based on actual demand for goods. The same is true of leading manufacturers of insulated wire and cables where orders are very numerous although for smaller weights. Sport and summer footwear is active.

Rubber manufacturing activity generally is somewhat on the order of that in 1928. This condition is naturally reflected in the slowly increasing demand for compounding ingredients in general.

ACCELERATORS. The established lines of organic accelerators are in steady demand. The tendency is toward the more active ones for use in the low temperature cures essential in competitive output.

ANTIOXIDANTS. These materials are well recognized as essential in goods of all qualities. Their special adaptabilities afford scope for selection according to service expected of the rubber products.

BENZOL. The production of benzol is increasing with the steel output. Effective May 1 prices were reduced 1 cent per gallon on 90 per cent and pure grades.

CARBON BLACK. The price is holding firm and unchanged. Production is running strong, and the demand by the rubber industry is improving as tire manufacturing schedules are advanced.

CLAY. While the consumption of clay as a reenforcing agent is still of good proportions, the tonnage so employed has decreased owing to the substitution for it of reclaim, which at current low levels gives better technical value at volume costs that compete with clay.

LITHARGE. The consumption of litharge is seasonal. The demand is advancing and the price is steady.

LITHOPONE. The rubber goods demand is not yet up to expectations but is gaining in volume. The price is firm and unchanged.

MINERAL RUBBER. No change in qualities or prices has occurred. The material is one of the essential ingredients for which the demand is always large and dependable.

V. M. P. NAPHTHA. The price is strong and steady and consuming demand fair.

SOFTENERS. These are of great variety in character and adaptability. In general they are in steady demand at moderately firm prices.

ZINC OXIDE. The demand for rubber goods manufacture is improving but is not yet up to that anticipated. Prices are steady.

New York Quotations

May 26, 1930

Abrasives			
Pumice stone, pwd.	lb.	$0.02½	@$0.04
Rottenstone, domestic	ton	23.50	@28.00
Accelerators, Inorganic			
Lead, carbonate	lb.	.07¾	@
red	lb.	.09	@
sublimed blue	lb.	.07¼	@
sublimed white	lb.	.07¼	@
super-sublimed white	lb.	.07¼	@
Lime, R. M. hydrated	ton	20.00	@
Litharge	lb.	.08	@
Magnesia, calcined heavy	ton	80.00	@
carbonate	lb.	.08¾	@ .11
Orange mineral A.A.A.	lb.	.11	@
Accelerators, Organic			
A-1	lb.	.22	@ .27
A-5-10	lb.	.31	@ .36
A-7	lb.	.55	@ .65
A-11	lb.	.62	@ .75
A-16	lb.	.57	@ .65
A-19	lb.	.58	@ .75
A-20	lb.	.64	@ .80
A-32	lb.	.80	@ .95
Accelerator 49	lb.	.35	@ .40
Aldehyde ammonia	lb.	.65	@ .70
Anhydro formaldehyde aniline	lb.	.40	@ .42½
Butene	lb.		@
Captax	lb.		@
Crylene	lb.		@
paste	lb.		@
D. B. A.	lb.		@
D. O. T. G.	lb.	.42	@ .47
D. P. G.	lb.	.30	@ .35
Ethylidine aniline	lb.	.45	@ .47½
Heptene	lb.		@
base	lb.		@
Hexamethylenetramine	lb.	.58½	@ .61
Lead oleate, No. 999	lb.	.15	@
Witco	lb.	.14	@
Lithex	lb.		@
Methylene dianiline	lb.	.37½	@ .40
Monex	lb.		@
Phenex	lb.	.70	@ .75
Pipsol	lb.	4.00	@ 4.50
Plastone	lb.		@
R-2	lb.	1.75	@ 2.15
base	lb.	4.50	@ 5.00
R & H 40	lb.	.40	@ .42½
50	lb.	.40	@ .42½
Safex	lb.		@
S-P-D-X	lb.	.70	@ .75
Super-sulphur No. 1	lb.		@
No. 2	lb.		@
Tensilac 39	lb.	.40	@ .42½
No. 41	lb.		@
Thermlo F	lb.		@
Thiocarbanilid	lb.	.25½	@ .28½
Trimene	lb.		@
base	lb.		@
Tuads	lb.		@
Ureka	lb.	.70	@ 1.00
V. G. B.	lb.		@
Waxene	lb.	.30	@ .40
Z. B. X.	lb.		@
Z-88	lb.	.50	@ .60
Zimate	lb.		@
Acids			
Acetic 28% (bbls.)	100 lbs.	3.88	@ 4.13
glacial (carboys)	100 lbs.	14.18	@14.43
Sulphuric, 66°	ton	15.50	@
Alkalies			
Caustic soda, 76% solid	100 lbs.	$2.90	@$3.00
Antioxidants			
Age-Rite, powder	lb.		@
resin	lb.		@
white	lb.		@
Albasan	lb.		@
Antox	lb.		@
Oxynone	lb.	.68	@ .90
Resistox	lb.	.54	@ .65
Stabilite	lb.	.57	@
Stabilite-Alba	lb.	.70	@ .75
Sunproof	lb.		@
Binders, Fibrous			
Cotton flock, dark	lb.	.09	@ .11
dyed	lb.	.50	@
white	lb.	.12	@ .25
Colors			
BLACK			
Bone	lb.	.09½	@
Carbon (see Reenforcers)			
Drop (bbls.)	lb.	.05½	@ .15
Lampblack (commercial)	lb.	.07	@ .08
BLUE			
Huber, brilliant	lb.	3.50	@ 4.00
Prussian	lb.	.35	@ .37
Ultramarine	lb.	.06	@ .30
BROWN			
Huber, mocha	lb.	1.60	@ 2.10
Sienna, Italian, raw	lb.	.05½	@ .12½
GREEN			
Chrome, light	lb.	.27	@ .31
medium	lb.	.28	@ .31
Chromium oxide	lb.	.33	@
Huber, brilliant	lb.	3.75	@ 4.25
ORANGE			
Huber, Persian	lb.	.50	@ 1.00
RED			
Antimony Crimson, R. M. P. No. 3	lb.	.48	@
Sulphur, free	lb.	.52	@
7-A	lb.	.35	@
Sulphuret, golden No. 60	lb.	.16	@ .20
Z-2	lb.	.22	@
RED (Continued)			
Huber, brilliant	lb.	$1.35	@$1.85
Iron Oxides			
bright pure domestic	lb.	.10	@
bright pure English	lb.	.14	@
bright reduced English	lb.	.10	@
bright reduced domestic	lb.	.09	@
Indian (maroon), pure domestic	lb.	.10	@
Indian (maroon), pure English	lb.	.11	@
Indian (maroon) reduced English	lb.	.09½	@
Indian (maroon) reduced domestic	lb.	.07	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.03⅝	@
Sunburnt red	lb.	.14	@
Venetian red	lb.	.02	@ .05
WHITE			
Lithopone	lb.	.05½	@ .05¾
Albalith	lb.	.05¼	@ .05½
Azolith	lb.	.05¼	@ .05¾
Grasselli (50 lb. bags)	lb.	.05¼	@ .05½
(400 lb. bbls.)	lb.	.05½	@ .05¾
Titanium oxide, pure	lb.	.20	@ .22
Titanox "B"	lb.	.07¼	@ .07¾
Titanox "C"	lb.	.07¾	@ .08¼
Zinc Oxide			
AAA (lead free) (bbls.)	lb.	.07	@
Azo (factory):			
ZZZ (lead free)	lb.	.06½	@ .07
ZZ (leaded)	lb.	.06¼	@ .06¾
Z (8% leaded)	lb.	.06¼	@ .06¾
Cryptone	lb.	.07¼	@ .07½
Green seal	lb.	.10⅜	@ .10⅝
Kadox, black label	lb.	.10⅜	@ .10⅝
blue label	lb.	.09⅜	@ .09⅝
red label	lb.	.08	@ .08¼
Red seal	lb.	.09⅜	@ .09⅝
Special	lb.	.07	@ .07¼
White seal	lb.	.11⅝	@ .11⅞
XX green	lb.	.07	@ .07¼
XX red	lb.	.06½	@ .06¾
Zinc sulphide	lb.	.16	@ .16¼
YELLOW			
Cadmium sulphide	lb.	.90	@ 1.40
Chrome	lb.	.17	@ .17½
Huber, canary	lb.	2.80	@ 3.30
Ochre, domestic	lb.	.01½	@ .02½
French	lb.	.03	@
Oxide, pure	lb.	.09	@
Zinc, C. P., imported	lb.	.21	@
Factice—See Rubber Substitutes			
Fillers for Pliability			
Flex	lb.		@
Fumonex	lb.		@
P-33	lb.		@
Thermax	lb.		@
Uncompressed	lb.		@
Velvetex	lb.		@
Fillers, Ordinary			
Asbestine	ton	15.00	@
Baryta white (f.o.b. St. Louis, bbls.)	ton	23.00	@
Baryta white (f.o.b. St. Louis, paper bags)	ton	22.20	@

New York Quotations

May 26, 1930

Fillers, Ordinary *(Continued)*

Barytes, pure white	ton		@
off color	ton		@
medium	ton		@
Foam "A" (f.o.b. St. Louis, bbls.)	ton	$23.00	@
Foam "A" (f.o.b. St. Louis, bags)	ton	23.00	@
Basofor	lb.	.04½	@
Blanc fixe, dry	lb.	.04½	@
pulp	ton	42.50	@45.00
Infusorial earth	ton	35.00	@
Slate flour, gray (fact'y)	ton	7.00	@
Whiting			
Domestic	100 lbs.	1.00	@
English cliffstone	100 lbs.	1.50	@
Imported chalk	100 lbs.	1.00	@ 1.50
Paris White, English cliffstone	100 lbs.	1.50	@ 3.50
Quaker	ton		@
Sussex	ton		@
Witco (l. c. l.) (f.o.b. New York)	ton	20.00	@

Finishes

Mica, amber	lb.	.04½	@
Shellac, fine orange	lb.		@
Starch, corn	100 lbs.	3.62	@ 3.82
potato	lb.	.05½	@ .06

Inflating Material

Ammonium carb., pwd.	lb.	.11	@
lump	lb.	.10	@

Lubricants

Soapbark (cut)	lb.	.09½	@ .10
Soapstone	ton	15.00	@22.00
Talc, domestic	lb.	.01¼	@
French	ton	18.00	@22.00
Pyrax A	ton		@

Mineral Rubber

Fluxrite (solid)	lb.	.05	@
Genasco (fact'y)	ton	40.00	@42.00
Gilsonite (fact'y)	ton	37.14	@39.65
Granulated M. R.	ton		@
Hydrocarbon, hard	ton		@
Ohmlac Kapak, M. R. (f.o.b. fact'y)	ton	60.00	@
M. 4 (f.o.b. fact'y)	ton	175.00	@
Paradura (fact'y)	ton	62.50	@65.00
Pioneer, M. R., solid fact'y	ton	40.00	@42.00
M. R. granulated	ton	50.00	@52.00
Robertson, M. R., solid (fact'y)	ton	34.00	@80.00
M. R. granulated	ton	38.00	@80.00

Oils

Kerosene	gal.	.123	@
Mineral	gal.	.20	@
Poppy seed oil	gal.	1.70	@
Rapeseed, refined	gal.	.68	@ .70
Red oil, distilled	lb.	.10½	@ .10⅝

Oils *(Continued)*

Rubber process	gal.	$0.25	@
Spindle	gal.	.30	@

Reenforcers

Aluminum flake (sacks, c.l.)	ton	21.85	@
(sacks, l.c.l.)	ton	24.50	@
Carbon Black			
Aerfloted arrow	lb.	.05½	@ .11
Century (works, La., c. l.)	lb.	.05	@
Compressed	lb.		@
Disperso (works, La., c. l.)	lb.	.05	@
Excello	lb.	.05	@
Gastex (f.o.b. fact'y) contracts	lb.	.04	@ .04¾
carload	lb.	.05½	@
less carload	lb.	.07	@
Micronex	lb.		@
Palmer gas black	lb.	.05	@
Supreme	lb.	.05	@
Clays			
Blue Ridge, dark	ton		@
China	lb.	.01¼	@
Dixie	ton		@
Langford	ton		@
Par	ton		@
Perfection	ton	25.00	@
Suprex	ton	8.00	@20.00
Glue, high grade	lb.	.25	@ .35

Rubber Substitutes or Factice

Black	lb.	.08	@ .13
Brown	lb.	.08	@ .14
White	lb.	.09	@ .15

Softeners

Burgundy pitch	100 lbs.	5.00	@ 6.00
Atlas	100 lbs.	6.50	@
Corn oil, crude	lb.	.10	@
Cottonseed oil	lb.	.0865	@ .0890
Coumarone resins	lb.	.10	@ .11
Cycline oil	lb.	.25	@ .34
Degras	lb.	.03¼	@ .04½
Fluxol	ton	18.00	@80.00
Fluxrite (fluid)	lb.	.05	@
Laurex, ton lots	lb.		@
Palm oil (Lagos)	lb.	.06¾	@
Palm oil (Niger)	lb.	.06½	@
Palm oil (Witco)	lb.	.10	@
Para-flux	gal.	.17	@
Petrolatum, snow white	lb.	.08	@ .08⅜
Pigmentar	lb.	.02½	@ .03
Pigmentaroil (tank cars, factory)	gal.	.17	@
(bbls., drums)	gal.	.24	@
Pine oil, dest distilled	gal.	.55	@ .56
Pine pitch	bbl.	7.00	@ 8.00
Pine tar (retort)	bbl.	13.50	@14.00
Rosin K (bbls.)	280 lbs.	7.40	@

Softeners *(Continued)*

Rosin oil compounded	gal.	$0.30	@
No. 3, deodorized	gal.	.58	@
No. 556, deodorized	gal.	.49	@
Rubberseed, drums	lb.	.09½	@
Rubtack	lb.	.11	@
Stearex	lb.		@
Stearic acid, double pressed	lb.	.14½	@ .15
Tackol	lb.	.09	@ .18
Tonox	lb.		@
Witco No. 20	gal.	.17	@
Woburn oil	lb.	.05½	@ .06
Wobonite No. 94	lb.	.03½	@

Solvents

Benzol (90% drums)	gal.	.26	@
Carbon bisulphide (drums)	lb.	.05½	@ .11
tetrachloride (drums)	lb.	.06½	@ .07
Dip-Sol	gal.	.12	@
Dryolene, No. 9	gal.	.09½	@
Gasoline			
No. 303			
Drums, c. l.	gal.	.20	@
Tankcars	gal.	.16	@
Rub-Sol	gal.	.08½	@
Solvent naphtha (tanks)	gal.	.28	@
Stod-Sol	gal.	.09	@
Turpentine, Venice	gal.	.20	@
dest distilled	gal.	.40	@ .43

Vulcanizing Ingredients

Sulphur			
Rubber sulphur	100 lbs.	1.75	@ 2.25
Soft rubber (c.l.)	100 lbs.		@
(l.c.l.)	100 lbs.		@
Sulphur chloride	lb.	.03½	@ .04
Superfine commercial flour (bbls.)	100 lbs.	2.55	@ 3.10
(bags)	100 lbs.	2.20	@ 2.80
Tire brand, superfine, 100 lbs.		1.75	@
Tube brand, velvet	100 lbs.	2.30	@
Velvet flour (240 lb. bbls.)	100 lbs.	2.95	@ 3.50
(150 lb. bags)	100 lbs.	2.60	@ 3.15
Vandex	lb.		@

(See also Colors—Antimony)

Waxes

Beeswax, white, pure	lb.	.48	@ .52
carnauba	lb.	.33	@ .34
ceresin, white	lb.	.10	@ .11
montan	lb.	.06½	@ .07
ozokerite, black	lb.	.21	@ .22
green	lb.	.23	@ .24
Paraffin			
122/124 crude, white scale	lb.	.03¼	@
124/126 crude, white scale	lb.	.03¼	@
125/127 fully refined	lb.	.04¼	@

Miscellaneous Supplies

Mold Solution			
Rusco mold paste	lb.	.12	@ .30

Reported Rubber Stocks

Producing Centers	Long Tons 1929 Oct.	Nov.	Dec.	Long Tons 1930 Jan.	Feb.	Mar.
Singapore	28,582	25,974	27,949	28,475	32,074	32,629
Penang	6,365	4,989	5,208	4,993	5,476	5,500
Para	2,955	3,237	3,103	3,447	3,545	2,857
Totals	37,902	34,200	36,260	36,915	41,095	40,986
Manufacturing Centers						
London	47,803	52,454	54,304	60,434	64,557	69,233
Liverpool	13,903	17,655	18,949	19,849	20,605	21,198
Amsterdam	2,222	2,150	2,179	2,154	2,159	2,220
United States	88,483	92,219	105,138	120,649	131,748	156,516
Plantations afloat*	89,200	88,869	90,840	94,828	97,931	96,297
Totals	241,611	253,347	271,410	297,894	317,000	345,464
Grand totals	279,513	287,547	307,670	334,809	358,095	386,450

* W. H. Rickinson & Son, *The World's Rubber Position, Compiled by Rubber Division, Department of Commerce, Washington, D. C.*

Netherlands East Indies Exports, 1927-1929

After a study and comparison of the various statistics on rubber exports from Netherland India, including the Batavia Rubber Trade Association figures, the final export figures of the Central Statistical Bureau of Batavia, and the revised figures from the reports on native rubber, Trade Commissioner Bliss concludes that the Trade Association figures are slightly inaccurate and on the low side by 2 to 3 per cent, but are so much earlier than other statistics that they must be used for current purposes. The Rubber Trade Association figures, in long tons, have been as follows:

	Estate	Dry Latex	Total Estate	Wet and Dry Native	Dry Native	Total Dry
1927	138,248	260	138,508	153,371	98,908	237,416
1928	138,429	1,349	139,778	127,144	89,530	229,308
1929	147,061	1,325	148,484	147,061	108,237	256,721

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for April, 1930:

RUBBER EXPORTS

Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham.

To	April, 1930 Rubber Tons	Latex Tons
United Kingdom	8,112	35
United States	28,110	116
Continent of Europe	5,045	71
British possessions	279	...
Japan	1,926	3
Other countries	116	...
Totals	43,588	225

RUBBER IMPORTS

Actual Imports by land and sea

From	April, 1930 Dry Rubber Tons	Wet Rubber Tons
Sumatra	573	6,437
Dutch Borneo	528	4,516
Java and other Dutch islands	185	66
Sarawak	980	46
British Borneo	168	22
Burma	292	18
Siam	172	194
French Indo China	351	10
Other countries	60	9
Totals	3,309	11,318

New York Quotations
May 26, 1930

Drills

38-inch 2.00-yard	yard	$0.14½@
40-inch 3.47-yard		.08⅝@
50-inch 1.52-yard		.19¾@
52-inch 1.90-yard		.16 @
52-inch 2.20-yard		.14⅛@
52-inch 1.85-yard		.16½@

Ducks

38-inch 2.00-yard D. F.	yard	.15½@
40-inch 1.45-yard S. F.		.21⅜@
72-inch 1.05-yard D. F.		.32⅜@
72-inch 16.66-ounce		.34⅜@
72-inch 17.21-ounce		.35½@

MECHANICAL

Hose and belting	pound	.33 @

TENNIS

52-inch 1.35 yard	yard	.22½@

Hollands

RED SEAL

36-inch	yard	.14 @
40-inch		.15 @
50-inch		.19½@

GOLD SEAL

40-inch, No. 72	yard	.18½@
40-inch, No. 80		.19½@

Osnaburgs

40-inch 2.35-yard	yard	.13 @
40-inch 2.48-yard		.12⅜@
40-inch 3.00-yard		.10 @
40-inch 10-oz. part waste	lb.	.15¼@
40-inch 7 oz.	lb.	.11 @
37-inch 2.42-yard	yard	.12⅝@

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	.10¼@
Bombazine 60 x 48		.09¼@
Plaids 60 x 48		.11½@
Plaids 48 x 48		.10½@
Surface prints 64 x 60		.12½@
Surface prints 60 x 48		.11½@
Print cloth, 38½-in., 60 x 48		.05⅛@
Print cloth 38½-in., 64 x 60		.06⅛@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.10¼@
48 x 48, 2.85-yard		.09⅛@
64 x 68, 3.15-yard		.10 @
56 x 60, 3.60-yard		.08¾@
44 x 48, 3.75-yard		.07¼@
44 x 40, 4.25-yard		.06½@

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.06 @
44 x 40, 6.15-yard		.04¾@

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Peeler, karded	pound	.43 @

BUILDER 23/11

Peeler, karded	pound	.43 @

BUILDER 10/5

Peeler, karded	pound	.36 @

CORD 23/5/3

Peeler, karded	pound	.43 @

CORD 23/4/3

Peeler, karded	pound	.45 @

CORD 23/3/3

Peeler, karded	pound	.48 @

CORD 15/3/5

Peeler, karded	pound	.41 @

CORD 13/3/3

Peeler, karded	pound	.40 @

LENO BREAKER

8-oz. Peeler, karded	pound	.43 @
10-oz. Peeler, karded		.43 @

CHAFER

9.5-oz. Peeler, karded	pound	.45 @
12-oz. Peeler, karded		.44 @
14-oz. Peeler, karded		.43 @

Cotton and Fabrics

American Cotton

The outstanding topics for discussion are conditions affecting the new crop and the probable course of the Farm Board and cooperatives. Both seem to be viewed with equal misgiving.

Harriss & Vose, broker for the cooperative marketing associations, announced that up to May 15 it had received 400,000 bales of cotton against May contracts on the New York and New Orleans exchanges for the account of the cooperatives.

In defense of the action of the Farm Board, Harriss & Vose in its conspectus of May 17 said:

COTTON BULL POINTS

1. In March new orders were 112 per cent of output.
2. Shipments in March were 102 per cent.
3. Stocks in March were reduced 1 per cent.
4. Unfilled orders increased by 7 per cent in March.
5. Continued drastic curtailment in many southern mills.
6. Style trend swaying to cotton.
7. Cotton spinning gain in April over March.
8. Heavy rains in Southwest.
9. Drought in part of Georgia.
10. Cooperatives will not dump on unwilling market.

COTTON BEAR POINTS

1. Exports, this season, 1,000,000 bales lower than last year.
2. Domestic consumption, 400,000 bales smaller.
3. World's visible supply of American cotton, 300,000 bales larger.
4. Another large crop in view.
5. Consumption during first quarter far below last year's first three months.
6. Volume of new orders received by mills during first quarter was 18.5 per cent below last year.
7. Gain of 1,482,000 bales in cotton stocks.
8. Acute depression in Manchester.
9. Unfavorable conditions in India and China.
10. Political disturbances in India might interrupt cotton planting, and the Monsoon season is approaching.

"One of the functions of the Farm Board is to stabilize markets, through the lifting of a temporary surplus until a subsequent shortage makes that surplus needed. If the advisory committee on cotton should so recommend, a stabilization corporation could be set up to carry the surplus. Whether the cooperatives' cotton will be carried by themselves or by a stabilization corporation does not seem particularly important as far as the market effect is concerned. The point is that in our opinion a stabilization price has been set up by making loans at 16.54 cents. This price seems shrewdly calculated, and one upon which in the long run stabilization should not be difficult. It does not seem a far-fetched interpretation of Mr. Williams' statement that the cotton will not be disposed of even during the next crop year unless buyers want it badly enough to pay that price plus accrued charges."

Not everyone is in accordance with this view, however. George E. Roberts, vice president of the National City Bank, delivered the weekly address on May 15 before the Business Forum of the School of Business of the College of the City of New York. As reported in the *Journal of Commerce:*

"Advocating less government regulation of business, Mr. Roberts declared that 'the condition most favorable to human development is the largest degrees of individual liberty consistent with order and with the protection of the fundamental rights of all, freedom to exercise and develop our powers—freedom to make mistakes, for we learn by our mistakes.' "

What the weather will do to the crop is still a matter of conjecture. Excessive rains in the central and western belt made it look as if some of the crop were completely damaged, but time is still left for replanting.

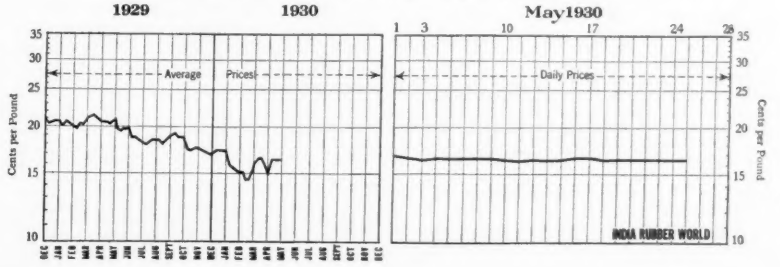
For the three-quarters of the year ended with April, the use of cotton dropped some 450,000 bales below a year ago. The figures are those of the United States Census Bureau. Consumption for the period was 4,855,999 bales, against 5,305,836 bales a year ago.

H. Hentz & Co. on May 13 reported further significant figures of the Association of Cotton Textile Merchants of New York. Sales for April amounted to 86.8 per cent of production, shipments during the month were 98.5 per cent of production, stocks on hand increased 9.1 per cent during the month, and unfilled orders decreased 7.8 per cent.

In the face of such figures, drastic action certainly is needed. With the same problem facing foreign manufacturers and producers, we find that almost similar remedies are being employed.

Every convention and meeting is featuring cotton. George A. Sloan, president, The Cotton Textile Institute, advocated advertising to promote sales and to find new outlets for cotton; Katrine Hooper told the interior decorators attending the

Daily Prices of Spot Middling Upland Cotton



Cotton Textile Institute's luncheon on May 16 of the progress made by Viennese designers in using cottons; and we even find the committee on New Uses of Cotton of the Department of Agriculture, Department of Commerce and Cotton Textile Institute, Inc., saying that consumer packaging of farm products in cotton bags offers an important possibility of increasing cotton consumption.

Another effort to bolster the cotton market is found in the fact that almost all the mill men are curtailing production. It is estimated that five million spindles are affected in curtailment of production of print cloths and sheetings.

Until the uncertainty concerning May and July cotton deliveries is overcome, cotton cannot be expected to give much account of itself.

Week ended April 26: Anticipation of the first May notices and the colorless market in spot cotton marked this week of trading. Notices for 227,400 bales were issued on Friday and they were promptly stopped by brokers acting for the cooperatives.

Commenting on this, Harriss & Vose said: "We believe that the taking up by the cooperatives of the cotton that was tendered in New York and New Orleans on Friday, by demonstrating the nature of the stabilization program and removing existing uncertainties, will help the entire market."

H. Hentz & Co. expressed the same view on April 25 when they stated: "In spite of the fact that the notices were promptly stopped, the market showed a sagging tendency which may be significant. The holders of the long contracts in May and July are apparently not interested in the differences and their main purpose is evidently to remove sufficient cotton from the market to bolster prices."

Prices on April 26 were:

Position	High	Low	Close	Yesterday's Close
May	16.04	15.88	15.98/16	16.04
July	16.13	15.99	16.06/07	16.13
Oct.	15.12	14.98	15.00/01	15.10/11
Oct.	14.88	14.72	14.74/76	14.85/87
Dec.	15.27	15.14	15.15/16	15.22/25
Dec.	14.99	14.88	14.90	14.96
Jan.	15.28	15.22	15.22/25	15.31
Jan.	15.01	14.92	14.92	15.00

Week ended May 3, 1930: "The feature of the market this week has been the steady widening of practically 65 points between July and new October," say Geo. H. McFadden & Bro. on May 2. "A week ago July closed at 16.13 and new October at 14.85, while tonight, July closed at 16.50 with new October at 14.57. This can best be explained by the fact that the weather has been sufficiently favorable over the week to cause a weakness in new crops, while the concentrated long interest in July New York remains stationary, and has been increased in New Orleans."

Prices on May 3 were:

Position	High	Low	Close	Yesterday's Close
May	16.39	16.19	16.19/20	16.38
July	16.51	16.28	16.31/37	16.50/51
Oct.	14.90	14.68	14.68	14.88/90
Oct.	14.60	14.39	14.41/42	14.57/59
Dec.	14.98	14.76	14.76/80	14.96
Dec.	14.68	14.47	14.50	14.67
Jan.	15.05	14.80	14.86/87	15.05
Jan.	14.73	14.72	14.59/61	14.74

Week ended May 10: The statement of Carl Williams, of the Federal Farm Board, made during the week drew general attention. He said that cotton taken from the 1929 crop would not be dumped on an unwilling market. But when the cooperatives take up all the cotton tendered on May and July contracts, they will have a tremendous stock on hand to hold until the market is able to absorb it. They may have to hold their cotton for a long time if they hold to their intention of stabilizing prices.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
May 3	16.46
May 10	16.54
May 17	16.42
May 24	16.39

In its weekly review of May 10, Harriss & Vose comment as follows: "Some of the wisest and most experienced cotton mill men go on the theory that cotton at 14 to 15 cents is always a good purchase upon price alone, and we are glad to help scatter this piece of wisdom throughout the trade."

Week-end figures showed a further sharp reduction in both European and domestic spinners' 1,500,000 bales under a year ago. The decrease in the visible supply was 79,000 bales, compared with 145,000 a year ago. A decline of 85,000 bales was recorded in the world's supply of all kinds, compared with a loss of 131,000 at this time last year. Prices on May 10 were:

Position	High	Low	Close	Yesterday's Close
May	16.44	16.30	16.35	16.35
July	16.50	16.31	16.45	16.42/45
Oct.	14.98	14.80	14.91/93	14.91/94
Oct.	14.72	14.58	14.64/67	14.65/69
Dec.	15.10	14.98	15.04	15.06
Dec.	14.80	14.68	14.73	14.74/76
Jan.	15.12	15.07	15.09	15.13
Jan.	14.87	14.77	14.82	14.84

Week ended May 17: This week's market can aptly be called a weather market. Early in the week the eastern rains were hailed as being beneficial to the crops, but western rains just the opposite. Later the general rainfall in the East made prices ease off, but the continued steady rains in Texas, where a wet May is feared, increased the spread between the old and new months for the last of the week. This old and new month spread moved up and down all week with the weather news.

Manchester cables indicated a depression beyond the point of dullness, and the Indian and Chinese situations were regarded as critical; China forbade importation of silver and laid an embargo on exportation of gold bars.

The New England mills bought only enough cotton during the week to supply current requirements. They have made no provision for their future cotton needs, their aim being to carry as little cotton as possible into the new crop year. Prices on May 17 were:

Position	High	Low	Close	Yesterday's Close
May	16.27	16.20	16.28	16.31
July	16.42	16.30	16.40/42	16.39/42
Oct.	15.41	15.25	15.37/38	15.33/35
Oct.	15.13	14.99	15.10	15.05
Dec.	15.47	15.33	15.42/43	15.39
Dec.	15.21	15.10	15.19/21	15.13/14
Jan.	15.46	15.36	15.46	15.41
Jan.	15.19	15.09	15.17	15.12
Mar.	15.40	15.29	15.40	15.34/35

Week ended May 24: The weather again predominated the market, with little change in conditions. Weather was a little better but was overruled as more complete information became available as to the amount of damage done by rain and floods. It was claimed that considerable replanting will be necessary in Northern Texas, Arkansas, and the Memphis districts.

The New York Cotton Exchange bulletin published figures that showed a gain of 1,482,000 bales in cotton on hand on April 30, as compared with last year. Total stock of all kinds of cotton on April 30 was 6,242,000 bales, against 4,760,000 at the end of April last year, 5,262,000 two years ago, 6,864,000 in the big crop season three years ago, and 6,066,000 four years ago.

The revised figures for cotton production by the Department of Agriculture were revealed to be 14,828,000 bales of 500 pounds compared with an estimate of 14,919,000 bales made in December, last year, and with the Census Bureau's final ginning figures of 14,821,499 bales made on March 20 of this year.

On May 27 the market for spot cotton was quiet, declining 10 points to 16.2 cents for middling uplands. Much needed absence of moisture over most of the belt for forty-eight hours induced an easier tone.

Staple Cotton

During the past month there has been very little interest in staple cottons and practically no change in value. The question of a duty on the importation of Egyptians is still of considerable interest to the rubber companies and thread manufacturers, but no attempt is now being made to add to the already large stock of spot Egyptians which have been imported recently. The impression grows that Egyptians will be cheaper next fall because of the large carryover and the prospects of a big crop.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. Market conditions are now essentially the same as a month ago. There is no change in volume of output or activities. The outlook, however, is appreciably better. Consumers' inventories are low; this means active demand when buying starts for the summer and fall months.

RAINCOAT FABRICS. A decided improvement has taken place in the demand for raincoats during the first half of May owing to rainy weather. This condition is seasonal and counted upon to promote demand for several weeks to come.

SHEETINGS. In May the market was very inactive and developed nothing of interest.

TIRE FABRICS. In the past thirty days there has been some improvement in the volume of goods delivered to tire manufacturers, but it was much below that called for at this time a year ago. The seasonal increase of tire production is slower than anticipated. Some new fabric business has been placed for nearby delivery, probably not beyond July. The volume has been very moderate and not sufficient to assure fabric mills a satisfactory run in the near future.

Reported Rubber Arrivals at New York

Plantations

	Cases
Apr. 16. By "Tampa," London.	
Charles T. Wilson Co., Inc.	112
Apr. 16. By "Thurland Castle," Far East.	
Charles T. Wilson Co., Inc.	1,104
Apr. 20. By "Matra," Far East.	
Charles T. Wilson Co., Inc.	212
Apr. 21. By "City of Salisbury," Far East.	
H. Muehlstein & Co., Inc.	2,400
Charles T. Wilson Co., Inc.	67
Apr. 25. By "Siantar," Far East.	
H. Muehlstein & Co., Inc.	*450
Apr. 26. By "Silverpine," Far East.	
H. Muehlstein & Co., Inc.	*610
Apr. 26. By "Simaloer," Far East.	
H. Muehlstein & Co., Inc.	840
Charles T. Wilson Co., Inc.	420
Apr. 28. By "Lancastria," Far East.	
H. Muehlstein & Co., Inc.	175
Apr. 28. By "Silveroak," Far East.	
H. Muehlstein & Co., Inc.	*365
Apr. 28. By "Springbank," Far East.	
H. Muehlstein & Co., Inc.	70
H. Muehlstein & Co., Inc.	†70
Apr. 30. By "Beemsterdyk," Far East.	
H. Muehlstein & Co., Inc.	540
Charles T. Wilson Co., Inc.	63
Apr. 30. By "Javanese Prince," Far East.	
H. Muehlstein & Co., Inc.	1,840
Charles T. Wilson Co., Inc.	529
Apr. 30. By "Pres. Fillmore," Far East.	
H. Muehlstein & Co., Inc.	390
Charles T. Wilson Co., Inc.	856
May 3. By "Steel Trader," Far East.	
H. Muehlstein & Co., Inc.	1,200
Charles T. Wilson Co., Inc.	260
May 4. By "Pres. Jefferson," Far East.	
H. Muehlstein & Co., Inc.	*100
May 4. By "Silver Hazel," Far East.	
H. Muehlstein & Co., Inc.	*965
May 5. By "Menestheus," Far East.	
H. Muehlstein & Co., Inc.	425
May 6. By "Silverpalm," Far East.	
H. Muehlstein & Co., Inc.	1,668
Charles T. Wilson Co., Inc.	250
May 8. By "Sitoebonde," Far East.	
H. Muehlstein & Co., Inc.	818
May 8. By "Tatsuta Maru," Far East.	
H. Muehlstein & Co., Inc.	*200
May 12. By "City of Khartoum," Far East.	
H. Muehlstein & Co., Inc.	580
Charles T. Wilson Co., Inc.	602
May 12. By "City of Worcester," Far East.	
H. Muehlstein & Co., Inc.	375
May 12. By "Steel Seafarer," Far East.	
H. Muehlstein & Co., Inc.	1,310
Charles T. Wilson Co., Inc.	280
May 13. By "Pres. Wilson," Far East.	
H. Muehlstein & Co., Inc.	100
H. Muehlstein & Co., Inc.	†1,210
Charles T. Wilson Co., Inc.	513

*Arrived at Los Angeles.
†Arrived at Boston.

Paras

Apr. 26. By "Boniface," Brazil.	
H. Muehlstein & Co., Inc.	38

Guayule

May 3. By "H. R. Mallory," Mexico.	
Continental Rubber Co. of N. Y.	560
May 7. By "Erazos," Mexico.	
Continental Rubber Co. of N. Y.	560
May 14. By "El Oceano," Mexico.	
Continental Rubber Co. of N. Y.	560

Netherlands East Indies Exports

Long Tons

	Total Jan.-Dec.		1929		
	1928	1929	Oct.	Nov.	Dec.
Java and Madura	58,848	66,010	4,697	4,760	5,189
Sumatra East Coast	82,511	87,589	8,295	6,711	8,078
Other N. E. I.:*					
Atjeh	4,046	4,193	479	204	233
Riouw	9,533	10,341	798	687	816
Djambi	32,807	31,085	2,157	2,702	2,932
Palembang	18,222	22,476	1,434	1,585	2,031
Lampongs	3,015	3,219	259	232	261
Benkoelen	50	47	4	3	4
Sumatra West Coast	1,083	1,283	136	46	53
Tapanoeli	5,757	6,450	522	510	600
Banka	659	846	25	7	18
Billiton	110	124	12	4	3
West Coast Borneo	21,628	26,160	2,110	1,581	2,186
South East Borneo	24,575	29,290	2,599	1,813	2,120
Menado	204	193	9	14	17
Celebes	31	80	4	4	8
Amboino	32	27	1	3	2
Total other N. E. I.	121,752	135,814	10,549	9,395	11,284
Grand totals	263,111	289,413	23,541	20,866	24,551

*Including wet native rubber.

World Rubber Production—Net Exports

Long Tons

	Calendar Years		1930			
British Malaya	1928	1929	Jan.	Feb.	Mar.	Apr.
Gross Exports	409,500	579,524	52,535	48,947	47,320	43,813
Imports	149,787	161,612	11,773	12,960	13,236	14,627
Net	259,713	417,912	40,762	35,987	34,084	29,186
Ceylon	57,271	80,795	7,741	7,825	6,269	5,030
India and Burma	10,790	11,720	1,560	1,245	1,129	†
Sarawak	10,087	11,079	791	847	976	†
Br. No. Borneo	6,698	7,581	*600	*600	*600	†
Siam	4,813	5,024	386	469	391	†
Java and Madura	58,848	66,010	5,709	6,900	5,796	†
Sumatra E. Coast	82,511	87,589	7,831	7,191	6,612	†
Other N. E. Indies	121,671	134,732	8,920	11,414	11,007	†
French Indo-China	9,616	10,147	856	944	643	433
Amazon Valley	21,129	21,148	1,837	1,787	1,674	1,201
Other America	1,490	996	*75	*75	*75	†
Mexican Guayule	3,076	1,275	150	75	148	†
Africa	6,124	4,596	*400	*400	*400	†
Totals	653,837	860,404	77,618	75,759	69,804	

* Estimate. † Not available.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

Ceylon Rubber Exports

January 1 to March 6, 1930	Tons
To United Kingdom	3,945.58
Continent	1,321.09
Other countries in Europe	11.54
Australia	401.89
America	12,045.62
Canada and Newfoundland	2.50
Other countries in America	22.32
Egypt	3.00
Africa	1.05
India	22.33
Japan	42.82
Countries in Asia	.66
Total	17,820.40
For the same period last year	18,003.53

Annual Exports, 1922-1929	Tons
For the year 1929	80,476.44
1928	57,825.48
1927	55,355.77
1926	58,799.56
1925	45,697.19
1924	37,351.13
1923	37,111.88
1922	47,367.14

World Rubber Absorption

Long Tons

	Calendar Years		1930		
Consumption	1928	1929	Jan.	Feb.	Mar.
United States	441,400	472,000	36,669	32,726	35,914
United Kingdom	48,504	72,023	4,076	6,044	7,108
Net Imports					
Australia	8,430	15,886	332	457	‡
Austria	3,043	3,324	151	160	‡
Belgium	7,958	9,445	612	1,143	‡
Canada	30,447	35,453	2,842	2,250	3,776
Czechoslovakia	3,138	4,650	577	239	‡
Denmark	566	799	93	127	‡
Finland	768	976	130	60	‡
France	36,498	59,342	4,207	4,482	‡
Germany	37,855	49,078	3,862	3,697	4,289
Italy	12,433	17,169	910	1,385	1,083
Japan	25,621	34,284	2,805	1,386	‡
Netherlands	2,243	3,022	209	188	‡
Norway	728	813	110	35	‡
Russia	15,134	11,773	*1,000	*1,000	‡
Sweden	2,356	3,857	219	93	‡
Switzerland	566	653	83	43	85
Others estimated†	8,000	8,000	*700	*700	*700
Grand totals	685,688	802,547	59,587	56,215	‡
Minus United States	441,400	472,000	36,669	32,726	35,914
Total foreign	244,288	330,547	22,918	23,489	‡

*Estimate to complete table. †Includes Argentina, Brazil, Chile, China, Cuba, Egypt, Estonia, Hungary, Latvia, Mexico, Poland, Portugal, Spain, and Union of South Africa. ‡Not available.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

London Stocks, March, 1930

	Landed for Mar. Tons	Delivered for Mar. Tons	Stocks March 31		
			1930 Tons	1929 Tons	1928 Tons
London					
Plantation	9,628	5,241	68,839	28,080	58,108
Other grades	4	1	44	83	119
Liverpool					
Plantation	†1,500	†1,016	†21,089	†4,326	†2,133
Total tons, London and Liverpool	11,132	6,258	89,972	32,489	60,360

† Official returns from the recognized public warehouses.

High Truck Tire Mileage

A Los Angeles trucking contractor claims the record for heavy-duty tire mileage. Three casings, he says, have to their credit 160,216, 156,782, and 153,342 miles respectively. He maintains a detailed tire service recording system and does everything possible to promote tire longevity.

United States Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	February, 1930		Two Months Ended February, 1930	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*Free*				
Crude rubber	95,619,557	$14,798,240	202,011,069	$32,591,803
Liquid latex	696,694	153,848	1,609,397	348,551
Jelutong or Pontianak	822,100	93,087	1,962,782	234,471
Balata	116,937	45,319	180,470	73,868
Gutta percha	.....	.....	.....	.....
Guayule	168,000	25,956	504,000	81,228
Siak, scrap and reclaimed	965,090	19,251	1,689,727	30,459
Totals	98,388,378	$15,135,701	207,957,445	$33,360,380
Chicle *Dutiable*	1,607,303	$828,551	2,531,710	$1,293,736
MANUFACTURED—*Dutiable*				
Belting	1,638	1,241	1,920	1,369
Tires *number*	235	6,217	602	16,103
Other rubber manufactures	.....	139,404	.....	272,676
Totals	.....	$146,862	.....	$290,148

EXPORTS OF FOREIGN MERCHANDISE

RUBBER AND MANUFACTURES				
Crude rubber	5,106,302	$960,790	12,149,024	$2,038,205
Balata	41,945	14,392	53,658	19,037
Gutta percha, rubber substitutes, and scrap	115	107	1,381	297
Rubber manufactures	.....	4,319	.....	6,292
Totals	5,148,362	$979.608	12,204,063	$2,063,831

EXPORTS OF DOMESTIC MERCHANDISE

MANUFACTURED				
Reclaimed	2,695,280	$157,224	4,832,589	$300,327
Scrap and old	4,378,123	174,286	9,269,902	384,503
Rubberized automobile cloth *sq. yd.*	100,197	50,081	247,576	128,100
Other rubberized piece goods and hospital sheeting *sq. yd.*	103,288	40,285	217,864	86,987
Footwear				
Boots *pairs*	47,126	93,699	139,836	299,001
Shoes *pairs*	104,877	98,160	282,452	323,782
Canvas shoes with rubber soles *pairs*	382,031	259,448	685,918	485,446
Soles *doz. pairs*	8,867	26,339	27,201	77,650
Heels *doz. pairs*	123,308	80,194	228,216	158,215
Water bottles and fountain syringes *number*	29,990	12,150	74,712	36,583
Gloves *doz. pairs*	8,422	23,158	21,508	55,729
Other druggists' sundries	.....	20,333	.....	47,165
Balloons *gross*	63,184	66,868	133,205	135,170
Toys and balls	.....	9,717	.....	16,823
Bathing caps *doz.*	22,154	56,933	28,316	69,289
Bands	32,159	15,747	80,358	39,346
Erasers	34,113	19,969	67,215	41,806
Hard rubber goods				
Electrical goods	28,939	9,066	264,883	35,083
Other goods	.....	29,139	.....	61,029
Tires				
Truck and bus casings, *number*	41,784	949,141	78,221	1,786,142
Other automobile casings *number*	203,193	1,655,044	361,697	3,066,643
Tubes, auto *number*	136,030	242,578	264,836	469,610
Other casings and tubes *number*	5,949	20,579	11,332	39,238
Solid tires for automobiles and motor trucks *number*	2,256	77,467	5,092	169,496
Other solid tires	79,689	17 399	230,322	42,890
Tire accessories	.....	119,589	.....	216,472
Rubber and friction tape	105,816	29,098	259,106	71,347
Belting	399,409	196,443	890,659	458,083
Hose	745,976	246,884	1,429,025	490,601
Packing	147,228	67,261	320,025	167,034
Thread	127,687	126,229	339,360	326,895
Other rubber manufactures	.....	225,735	.....	438,200
Totals	.....	$5,216,243	.....	$10,524,685

* Liquid latex included.

Crude Rubber Imports by Customs Districts

	*March, 1930		Three Months Ended *March, 1930	
	Pounds	Value	Pounds	Value
Massachusetts	4,050,977	$630,499	11,649,515	$1,914,869
New York	85,137,315	12,436,877	266,562,985	41,791,156
Philadelphia	969,028	129,817	3,137,569	460,854
Maryland	1,024,000	128,523	1,994,990	262.552
Virginia	509,582	65,143	509,582	65,143
Georgia	572,882	76,099	1,043,253	138,221
Los Angeles	6,831,008	958,146	15,821,471	2,389,763
San Francisco	96,044	14,433	465,194	73,914
Oregon	.....	.....	22,434	3,469
Wisconsin	.....	.....	266.180	44,792
Dakota	42,590	6,288	42,590	6,288
Ohio	1,740,093	248,393	2,910,222	456,168
Colorado	394,377	66,423	562,377	93,806
Totals	101,367,896	$14,760,641	304,988,362	$47,700,995

* Including latex, dry rubber content.

United Kingdom Statistics

IMPORTS

UNMANUFACTURED	March, 1930		Three Months Ended March, 1930	
Crude Rubber From—	Pounds	Value	Pounds	Value
Straits Settlements	16,918,300	£548,704	50,206,500	£1,642,976
Federated Malay States	5,562,600	181,650	18,751,900	618,739
British India	1,461,900	47,356	5,398,000	176,657
Ceylon and Dependencies	4,059,900	131,884	11,731,700	381,834
Java and Dutch Borneo	3,600,400	120,684	7,961,700	266,725
Sumatra and other Dutch possessions in Indian Seas	2,177,800	69,843	5,129,800	164,892
Other countries in East Indies and Pacific, not elsewhere specified	421,500	14,029	934,500	31,810
Brazil	580,700	19,623	2,056,900	68,470
South and Central America (except Brazil)	107,800	3,263	111.000	3,369
West Africa				
French West and Equatorial Africa	.....	.....	138,500	4,511
Gold Coast	19,900	663	76,200	2.470
Other parts of West Africa	92,900	3,304	368,300	13,385
East Africa, including Madagascar	27,500	894	227,700	7,259
Other countries	332,600	11,657	789,100	28,379
Totals	35,363,800	£1,153,554	103,881,800	£3,411,476
Gutta percha and balata	396,300	29,407	1,395,200	109,682
Waste and reclaimed rubber	943,400	12,500	2,574,100	33,035
Rubber substitutes	17,400	348	58,100	1,086
Totals	36,720,900	£1,195,809	107,909,200	£3.555,279
MANUFACTURED				
*Tires and tubes				
Pneumatic				
Outer covers	.....	£27,838	.....	£71.217
Inner tubes	.....	7,391	.....	18,530
Solid tires	.....	3,138	.....	11,403
Boots and shoes *doz. pairs*	216,032	201.968	425,071	451,097
Other rubber manufactures	.....	273,086	.....	655,093
Totals	.....	£513,421	.....	£1,207,340

EXPORTS

UNMANUFACTURED				
Waste and reclaimed rubber	1,949,400	£15,600	6,088,200	£49,147
Rubber substitutes	43,100	1,029	114,400	2,557
Totals	1,992,500	£16,629	6,202,600	£51,704
MANUFACTURED				
Tires and tubes				
Pneumatic				
Outer covers	.....	£394,569	.....	£1,143,692
Inner tubes	.....	65,052	.....	158,329
Solid tires	.....	8,550	.....	22,803
Boots and shoes *doz. pairs*	28,376	36,547	69,815	97,462
Other rubber manufactures	.....	231,208	.....	657,328
Totals	.....	£735.926	.....	£2.079,614

EXPORTS—COLONIAL AND FOREIGN

UNMANUFACTURED				
Crude Rubber To—				
Russia	1,280,500	£45,565	6,788,600	£260.110
Sweden, Norway, and Denmark	132,700	5,439	401,800	17,764
Germany	2,263,800	73,094	7,040,300	237,322
Belgium	942,400	32,063	2,130,900	79,005
France	1,861,600	70,021	5,933,400	231,591
Spain	43,500	2,081	246,200	10,190
Italy	418,200	13,915	808,200	29,572
Other European countries	262,800	11,821	1,088,800	45,856
United States	381,600	10,599	2,031,500	62,518
Other countries	121,800	5,153	411,000	19,399
Totals	7,708,900	£269,751	26,880,700	£993,327
Gutta percha and balata	33,400	3.361	118,100	10.754
Waste and reclaimed rubber	3,300	83	13,100	272
Totals	7,745,600	£273,195	27,011,900	£1,004,353
MANUFACTURED				
Tires and tubes				
Pneumatic				
Outer covers	.....	£3,679	.....	£13,551
Inner tubes	.....	695	.....	2,089
Solid tires	.....	.....	.....	60
Boots and shoes *doz. pairs*	1,181	2,263	4,656	8,464
Other rubber manufactures	.....	8,686	.....	22,226
Totals	.....	£15,323	.....	£46,390

* Motor cars, motorcycles, parts, and accessories, liable to duty from Sept. 29, 1915, until Aug. 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts, and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

Dominion of Canada Statistics

IMPORTS OF CRUDE AND MANUFACTURED RUBBER

	Twelve Months Ended December, 1928		Twelve Months Ended December, 1929	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc....	69,220,306	$18,059,287	79,511,819	$17,130,037
Rubber recovered.....	15,890,300	1,160,430	17,394,500	1,187,473
Rubber and gutta percha scrap	8,369,000	352,513	6,694,500	253,392
Balata	21,135	9,536	5,663	2,685
Rubber substitutes.....	905,100	154,637	1,831,500	203,666
Totals	94,405,841	$19,736,403	105,437,982	$18,777,253
PARTLY MANUFACTURED				
Hard rubber sheets and rods.	56,583	$36,924	85,462	$42,572
Hard rubber tubes.....	.....	15,778	.....	18,035
Rubber thread not covered...	227,489	251,948	275,100	262,293
Totals	284,072	$304,650	360,562	$322,900
MANUFACTURED				
Belting	.....	$184,010	.....	$199,758
Hose	.....	228,624	.....	272,861
Packing	.....	62,751	.....	69,155
Boots and shoes.....*pairs*	181,011	229,553	74,187	86,956
Clothing, including waterproofed	.....	576,566	.....	621,420
Elastic, round or flat.....	.....	32,207	.....	.....
Gaskets	.....	.....	.....	19,420
Gloves	.....	19,581	.....	21,445
Hot water bottles.....	.....	31,235	.....	48,794
Tires, bicycle.....*number*	20,305	10,673	28,590	13,965
Pneumatic .....*number*	21,352	230,535	19,993	276,090
Inner tubes.....*number*	32,963	49,276	2,348	8,035
Solid for automobiles and motor trucks....*number*	721	17,932	827	22,728
Other solid tires.....	.....	21,382	.....	22,564
Mats and matting.....	.....	122,790	.....	119,027
Cement	.....	78,014	.....	67,203
Golf balls.....*dozen*	30,663	117,653	28,558	86,299
Heels .....*pairs*	1,537,056	95,720	1,812,605	84,542
Other rubber manufactures..	.....	1,461,988	.....	1,569,332
Totals	.....	$3,570,490	.....	$3,609,594
Totals, rubber imports..	.....	$23,611,543	.....	$22,709,747

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

UNMANUFACTURED	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
Waste rubber.....	$263,967	.....	$279,482	.....
Totals	$263,967	.....	$279,482	.....
MANUFACTURED				
Belting	$470,902	.....	$564,609	.....
Canvas shoes with rubber soles.	5,092,198	.....	6,190,707	.....
Boots and shoes.....	3,509,660	.....	3,546,853	.....
Clothing, including waterproofed	28,759	.....	30,341	.....
Hose	257,116	.....	293,623	.....
Tires, bicycle	5,145	.....	12,650	.....
Pneumatic	16,735,971	.....	16,385,869	.....
Inner tubes	2,605,729	.....	2,255,370	.....
Solid	361,547	.....	166,468	.....
Other rubber manufactures..	1,362,468	$84,738	2,443,538	$133,770
Totals $30,429,495		$84,738	$31,890,028	$133,770
Totals, rubber exports..$30,693,462		$84,738	$32,169,510	$133,770

Standard Laboratory Ratings

H. E. Simmons, secretary-treasurer of the Rubber Division, A. C. S., Akron, O., in accordance with his authorization by the Division at the Atlanta meeting, has sent a letter to managers of the rubber testing laboratories in the United States requesting their individual cooperation for the general adoption of the standard procedure and point system of laboratory rating proposed by the Physical Testing Committee. These were recorded in INDIA RUBBER WORLD, February 1, 1930, pp. 71-72 and May 1, 1930, pp. 73-74.

Technically trained men are available on request without charge for rating individual laboratories on the point system. Ratings will not be disclosed.

THE LATEST DEVELOPMENT IN STEERING WHEEL CONstruction is a wheel with only three spokes. This device, a feature of the newest designs in the Husted safety steering wheels, is claimed to give many times the strength of the old-fashioned steering wheel and in addition allows the driver an unobstructed view of the instrument board. The wheel is of hollow tubular construction covered with a heavy coating of hard rubber.

Tire Production Statistics

	High Pressure Pneumatic Casings					
	All Types			Cord		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1928	10,217,708	58,457,873	55,721,937	3,580,576	19,302,218	19,351,380
1929	9,470,368	54,980,672	55,515,884	2,290,236	13,765,025	15,016,460
1930						
January ..	9,539,353	3,558,862	3,525,404	2,382,959	804,783	713,713
February ..	9,928,838	3,644,606	3,355,844	2,474,495	662,419	599,599
March	10,010,173	3,890,981	3,773,865	2,458,117	572,417	588,613

	Balloon Casings			Solid and Cushion Tires		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1928	6,594,978	38,878,218	35,931,982	152,120	508,223	512,602
1929	7,160,127	41,128,577	40,377,781	122,200	409,344	427,779
1930						
January ...	7,139,154	2,779,864	2,805,740	126,784	25,049	21,476
February ..	7,436,247	2,975,922	2,750,324	127,793	22,302	21,005
March	7,535,468	3,311,978	3,177,634	123,179	19,329	23,951

	High Pressure Inner Tubes			Balloon Inner Tubes		
	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
1928	5,037,716	23,255,891	23,749,966	7,049,748	36,878,990	34,095,223
1929	3,339,451	16,100,281	17,718,806	6,889,213	38,921,749	38,719,177
1930						
January ...	3,233,813	783,709	889,208	6,911,422	2,898,682	2,992,752
February ..	3,243,130	675,126	680,989	7,171,395	3,030,745	2,786,578
March	3,137,472	619,416	696,161	7,392,794	3,331,739	3,082,456

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires		Consumption of Motor Gasoline (100%) Gallons
	Cotton Fabric Pounds	Crude Rubber Pounds	
1928	222,243,398	600,423,401	13,633,452,000
1929	208,824,653	583,039,984	14,748,552,000
1930			
January	14,559,163	42,108,149	1,080,660,000
February	13,766,977	40,378,929	1,060,640,000
March	14,655,987	43,910,926	1,241,240,000

Rubber Manufacturers Association figures representing 75 per cent of the industry.

Comparative Tire Statistics for March

Statistics relating to the tire industry for March as compared with previous periods compiled by The Rubber Manufacturers Association are as follows:

	Production	Shipments	Inventory (End of Month)
PNEUMATIC CASINGS			
Mar., 1930	5,187,970	5,031,820	13,468,970
Feb., 1930	4,859,475	4,474,459	13,238,451
Mar., 1929	7,519,234	6,708,134	16,351,750
INNER TUBES			
Mar., 1930	5,270,560	5,042,385	14,057,360
Feb., 1930	4,942,755	4,626,559	13,905,291
Mar., 1929	7,466,356	7,466,382	17,750,180
SOLIDS AND CUSHIONS			
Mar., 1930	25,772	31,935	164,238
Feb., 1930	29,736	28,007	170,391
Mar., 1929	47,250	53,607	189,200

The Association's estimates are based on reports furnished by manufacturers who produce approximately 75 per cent of the total for the United States, but which have been adjusted to 100 per cent in the above tables.

U. S. and U. K. Rubber Consumption and Stocks Compared

	United States		United Kingdom	
1929	Retained	Consumption	Retained	Consumption
First quarter	161,641	128,565	26,198	16,934
Second quarter.....	139,462	139,292	18,194	14,626
Third quarter.....	108,924	113,746	36,597	19,996
Fourth quarter.....	117,283	84,872	41,685	20,533
1930				
First quarter.....	127,260	105,309	34,376	16,870
Totals	654,570	571,784	157,050	88,959
Stock increases	82,786		68,091	
Stock, Dec. 31, 1928.....	66,166		22,691	
Stock, Mar. 31, 1930.....	*148,952		90,782	

*The stock according to The Rubber Manufacturers Association, Inc., of America is 156,510 tons, a difference of only about 5 per cent.

While every effort has been made to insure the accuracy of the figures given (mostly official), no liability can be accepted for any error that may occur. *W. H. Rickinson & Son, London, England.*

Letters from Our Readers

Standardizing Rubber Laboratories

To the Editor:

Dear Sir: In carefully studying the procedure recommended for standard methods in the testing of rubber,[1] a number of points should be brought to the attention of your readers. The following constructive criticisms should be of interest.

Speed of Testing Rolls. The speed recommended is 24 r.p.m. for the slow roll and a ratio of 1.4. This would make the fast roll operate at 33.6. Very few laboratories work on such rapid rolls, and to work on rolls at this speed is hazardous for the operators ordinarily employed in rubber laboratories.

Mill Temperature. It is a question why the temperature of 158° F. has been selected as the optimum temperature for mixing rubber. This temperature is much above that used in mill practice in factories, and if we are to test rubber, it should be done under conditions more nearly approaching factory operating conditions.

An important point is the volume of water passing through and the method of introducing it to the center of the rolls. Large variations of temperature are common for different sections of the roll unless unusual care has been exercised in obtaining uniform distribution of the water over the entire inside surface of the rolls.

Also, as long as rolls of one manufacturer are used, the procedure might produce uniform results. However, different makes of rolls are of different thicknesses; this will give variations in the heat transferred from the water to the rubber or vice versa.

Mixing. The order of adding the softeners and fillers does not correspond with what is today considered best practice. It is certainly much easier to take up fillers rapidly after the softeners are added rather than before. This procedure is universally used in mill practice. Furthermore, different fillers require different practice in mixing, and a standard practice cannot be utilized in all cases.

Most laboratories and factories in this country use the master batch in order to obtain uniformity. It is noted that no provision has been made for this procedure, which is so important where uniform results are desired. The opinion as to "when rubber becomes smooth on the rolls" would be different for different operators; this puts a personal element in the work not constructive towards standardization.

Mold Dimensions. The dimensions of the test piece seem to be a little too thin since the tendency to tear increases with decrease in the thickness.

Preparation of Raw Stock for Curing. It is recommended that the raw stock be died out to give a sample ⅛-inch less in width and length than the mold cavity. This procedure does not recognize the importance of the difference of shrinkage of raw stocks, resulting in differences in thickness, and it seems that it would be preferable to add a definite volume, as calculated from the specific gravity, which would insure uniform flow and overflow.

Dieing of Specimens. Since the method of dieing out samples is of so much importance, a standard practice should be recommended, that is, the character of the block or backing has quite an important bearing upon the smoothness and the tendency to undercut when dieing out.

Evaluation of Results. Too much emphasis has been placed on tensile and not enough on modulus. The recommendation that the highest tensile be taken recognizes the accidental nature of tensile at break. Laboratories are coming more and more to use modulus as the criterion in preference to tensile. The modulus does not show the variations which are most always found in tensile figures for a given sample.

In determining the modulus the complete curve should be drawn and not promiscuous, isolated points in the curve.

May 23, 1930. Laboratory Director.

[1] "Standardizing Rubber Laboratories," India Rubber World, May 1, 1930, pp. 73-74.

Mold Spraying Solutions

To the Editor:

Dear Sir: Regarding a recent inquiry in your journal for mold cleaning information, the following is a good spraying solution for steel molds used to cure all around black stocks: To 12 quarts of water add 2 wine glasses of white or brown sugar, 1 wineglass of Rinso, 1 lump of Dipex, and boil for 5 minutes. Spray with 70 pounds of air.

For all around colored stocks: To 12 quarts of water add 2 ounces soap bark chips, 5 ounces white sugar, and boil 5 minutes. Spray with 70 pounds of air.

Can you give me a good spraying solution for steel molds used to cure black, non-blooming running board matting and black commercial matting?

April 25, 1930. Pressroom Foreman.

If any of our readers have any good spraying solutions, please send them to us for publication. The Editor.

Regarding Bentonite

To the Editor:

Dear Sir: I understand that bentonite is being used more or less extensively in the rubber industry in connection with the manufacture of non-flammable rubber cement and for dispersion of sulphur.

May 5, 1930. Enquirer.

The mineral bentonite mentioned by our correspondent is a hydrous silicate of alumina or clay of volcanic origin. Its chemical analysis given below shows it to be composed of the ordinary constituents of Portland cement except lime. The exact composition of bentonite depends upon slight variations in its manufacture for various uses. The following analysis, however, is representative:

	Percentages
Loss on ignition	6.0
Silica	58.2
Alumina	21.9
Iron oxide	3.8
Lime	5.9
Magnesia	2.4
Sulphurous acid	0.9
Chlorides	0.2
Sodium and potassium oxides	0.7
	100.0

The material is composed entirely of inert ingredients and capable of taking up as much as 4,000 per cent of water, depending upon its grade. This property is an indication of its superior value for emulsification and suspending purposes. The use of bentonite in rubber work is restricted to making aqueous dispersion of crude and reclaimed rubber compositions in water. Such dispersions can be diluted with water to form cements of any desired degree of rubber content or concentration. Such water cements are naturally non-inflammable. The Editor.

Rubber Cracking

To the Editor:

Dear Sir: In the case of a very hot mold wherever the rubber touches the metal, it starts curing before the mold is closed. During the cure the rubber in the mold is distorted and compressed in sections, and when the mold is opened, the rubber springs out at certain points and sometimes cracks while very hot. What is the remedy?

May 5, 1930. Molder.

To prevent cracking, the stock should be properly compounded in the first place, and then the mold should not be too hot for the cure. The cracks are the result of overcuring. The Editor.

Rubber Chiefs at National Foreign Trade Convention

R. J. Cope, vice president and general manager Firestone Tire & Rubber Co. (California); John W. Mapel, president, Goodrich Tire & Rubber Co. (California); Samuel B. Robertson, vice president, Pacific Goodrich Rubber Co.; and A. Schleicher, president, Samson Tire & Rubber Co., were members of the reception committee which greeted the delegates attending the 17th National Foreign Trade Convention at the Hotel Biltmore, Los Angeles, Calif., on May 21, 22, 23.

Prior to the opening of the convention the delegates were guests of the Breakfast Club, and while they partook of their open-air meal, the Goodyear blimp, "Volunteer," showered bouquets on them. The convention was opened by James A. Farrell, president, United States Steel Corp., New York. Paul R. Mahony, executive vice president, The B. F. Goodrich Co., International, New York, while present, was unable to deliver a scheduled address on "The Right Road through South America."